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ABSTRACTORS CONTRIBUTING TO THIS ISSUE

UNITED KINGDOM

F. A. Abbey, B.A. (Cantab.).
A. Ackroyd, M.R.C.S., L.R.C.P.
P. K. C. Austwick, B.SC.
C. C. Bannatyne, M.R.C.V.S.
W. R. Bett, M.R.C.S., L.R.C.P.
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Isobel W. Jennings, M.R.C.V.S.
Dr. F. K. Leeb.
D. Luke, B.SC., PH.D., M.R.C.V.S.
W. Mansi, M.V.SC. (Cairo), DIP. BACT. (Man.).
G. P. Marshall.
W. S. Marshall, B.SC., M.R.C.V.S.
Anna Mayr-Harting, M.D. (Prague).
W. E. Parish, B.V.SC., M.R.C.V.S
D. Poynter, B.SC.
Professor C. Rimington.
A. Seaman, B.SC.
W. G. Siller, B.SC., M.R.C.V.S., Dr. Med. Vet. (Vienna).
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M. Woodbine, PH.D., M.SC., F.R.I.C.

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COMMONWEALTH BUREAU OF ANIMAL HEALTH

THE

VETERINARY BULLETIN

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DISEASES CAUSED BY BACTERIA AND FUNGI

WILSON, G. S. [Director of the Public Health Laboratory Service, England and Wales] & MILES, A. A. [Professor of Experimental Pathology, University of London] (Revised by). (1955). **Topley and Wilson's principles of bacteriology and immunity.** Vol. I & II. pp. xi+1106+index pp. xlviii & pp. viii +1107-2331+index pp. xlviii. 4th edit., revised. 160s. **1090**

This work will need no introduction to the majority of our readers. It will suffice to comment on some of the changes embodied in the fourth edition. Major and minor additions and improvements are noticeable in every chapter, particularly in those on filtrable virus diseases in Vol. 2. Diseases mentioned here for the first time include virus pneumonia of pigs, virus abortion of ewes, strawberry foot-rot of sheep, lumpy skin disease of cattle and canine virus hepatitis. The list of *Salmonella* species (Vol. 1.) is now arranged in alphabetical order and contains 115 additions. The number of species of *Leptospira* has also grown. There are no major changes in the nomenclature used for bacteria and viruses. The quality of the paper is much better than that of the 1946 edition.—R.M.

MURNANE, D. & MATHEWS, A. G. (1955). **Local reactions following the intramammary infusion of cows.**—*Aust. vet. J.* **31,** 263-264. **1091**

In an attempt to reduce the incidence of staphylococcal infections in a "closed" herd, 92 quarters of 23 cows were treated by intramammary infusion of 25,000 units of crystalline potassium penicillin, dissolved in sterile distilled water. Severe local reactions consisting of thick clotted secretions much reduced in quantity and with high leucocyte counts, occurred in all quarters. Infusion of potassium penicillin of the same batch, and of other salts of penicillin, in aq. solns. of various types failed to produce any reactions. It was concluded that an unsuitable vehicle for therapeutic agents, such as distilled water that is not free from pyrogens or other impurities, may cause a severe reaction when introduced into the udder.—R. D. BARRY.

FENNESTAD, K. L., PEDERSEN, P. S. & MØLLER, T. (1955). ***Staphylococcus aureus* as a cause of reproductive failure and so-called actinomycosis in swine.** — *Nord. VetMed.* **7,** 929-947. [In English. German and Danish summaries.] **1092**

An outbreak of venereal infertility and abortion was associated with the isolation of *Staph. aureus* from an abscess in the bladder and from the testicles, tubular genital organs and accessory glands of the one boar involved and from 3 of the 4 infected sows examined. Of 18 sows served after the boar was infected, 14 became infected. Previously the boar had had good fertility. Detailed clin., P.M. and bacteriological findings are given.

—HUGH BOYD.

THAL, A. & MOLESTINA, J. E. (1955). **Studies on pancreatitis. III. Fulminating hemorrhagic pancreatic necrosis produced by means of staphylococcal toxin.**—*Arch. Path.* **60,** 212-220. [Authors' summary modified.] **1093**

Severe and highly fatal haemorrhagic pancreatic necrosis was regularly produced in dogs and rabbits by introducing staphylococcal toxin into the pancreatic duct at low pressures. It was found that the toxin diffuses through the duct wall readily without producing an anatomical breach. It had no effect when inactivated by heat or neutralized with antitoxin. The underlying cause of the extensive pancreatic necrosis was shown to be suppression of the pancreatic circulation by the toxin. The significance of this finding and the role of bacteria and bacterial products in the pathogenesis of the human disease are briefly discussed.

HODGES, H. G. (1955). **New York State mastitis research and control program.**—*Proc. 58th Ann. Meet. U.S. live Stk. sanit. Ass.*, Omaha, 1954. pp. 236-243. **1094**

About 4,000 herd owners have co-operated and all report increased production and reduced losses of cows as a result of mastitis control. During 1953–54, 339 herds containing 10,504 cows were dealt with under the scheme for the first time. Abnormal secretions were revealed in 13·6% of cows and 12·5% of quarters were infected with *Streptococcus agalactiae*. Further surveys of 124 of these have revealed a 47% reduction in abnormal secretions and a 72% reduction in *Str. agalactiae* infections. Streptococci other than *Str. agalactiae* were responsible for 26% of infections and other pathogens for 17%. *In vitro*, *Str. agalactiae* grew in all normal milk samples after a lag period of 5 hours and growth had reached significant levels in 10 hours. *In vivo*, infection of the udder always resulted when milk infected with small numbers of this organism was placed in the teat cavity, but direct inoculation of the organism into the teat canal produced infection in only 14%. No immunity was imparted as a result of the infection.—A. ACKROYD.

BLACKBURN, P. S., LAING, C. M. & MALCOLM, D. F. (1955). **A comparison of the diagnostic value of the total and differential cell counts of bovine milk.**—*J. Dairy Res.* **22**, 37-42. [Authors' summary modified.] **1095**

Total and differential cell counts were obtained for 1,710 samples of milk from cows in which the stage of lactation was known. A bacteriological examination was also made. Both cell counts considered together showed no marked advantage over the total cell count alone in the diagnosis of mastitis, except in milk of late lactation.

NEUMANN, H.-J. & SCHIERHOLZ, H. (1955). Die Injektüle—ein Fortschritt in der Behandlung der bovinen Mastitis. **[A special syringe for the treatment of bovine mastitis.]** — *Prakt. Tierarzt.* No. 11, 316-318. **1096**

An account of a special syringe (the "Injektüle") designed for the intramammary injection of antibiotics in oily suspension. The material to be injected is supplied by the manufacturers in cylindrical containers, each of which fits inside the outer casing of the syringe and acts as a plunger. Detachable teat cannulas made of plastic are supplied: they are discarded after use.—W. R. BETT.

PIRINGER, W. & PIRINGER, E. (1955). Milzbrand nach aktiver Schutzimpfung. **[Anthrax in cattle following use of a spore vaccine.]** — *Wien. tierärztl. Mschr.* **42**, 634-642. [English, French and Italian summaries.] **1097**

Of about 600 cattle of a dairy in Colombia, 13 died following the use of an anthrax spore vaccine, prepared by a local firm. The vaccine was subsequently found to be of a higher than normal virulence and to contain 30% of bacillary forms. Immune serum and penicillin treatment prevented further losses.—E.G.

HAWLEY, G. E. (1955). **The suffusion method for treating severe mastitis.**—*Vet. Med.* **50**, 347-348. **1098**

This is a method to bring effective levels of antibiotic to the upper part of the udder. Pilot needles (1 inch, 14 gauge) are inserted 3 in. apart round the quarter and 1 to 1½ in. below the point of attachment of the gland. Individual needles (6 or 8 in., 20 gauge) are inserted through the pilot needles and terramycin (1 g. per 80 ml. sterile saline) injected, *i.e.*, 20 ml. of 12·5 mg. per ml. through each suffusion needle. This was efficacious in 4 cases of severe gangrenous mastitis.

—MALCOLM WOODBINE.

AKOPYAN, E. S. (1953). **[Activation of latent infection in laboratory animals by anthrax STI vaccine.]**—*Trud. nauchno-kontrol. Inst. vet. Preparatov.* **4**, 215-423. [In Russian.] **1099**

Latent infections with *Clostridium septicum*, *Cl. chauvoei*, or *Pasteurella septica* were set up in mice, g. pigs and rabbits. Inoculation of "STI" anthrax vaccine (a non-capsulated variant of *B. anthracis*) activated the latent infection, the animals dying 18–36 hours after inoculation of the vaccine. The author concluded that latent infection was responsible for deaths from haemorrhagic septicaemia or clostridial infections of farm animals 2–7 days after inoculation of anthrax vaccine.—R.M.

ISRAIL, M. & QUADER, M. A. (1955). **Duration of immunity following vaccination with Sterne's avirulent anthrax spore vaccine. I.** —*Pakist. J. sci. Res.* **7**, 38-40. **1100**

The vaccine was tested on 11 sheep, each injected with 1 ml. containing 3–4 million spores. The vaccinated sheep were challenged in 4 lots at intervals of 6 months over a period of 26 months with 2 virulent strains of *B.*

anthracis and tested against 11 unvaccinated (control) sheep. All the vaccinated sheep survived; in the control group of 11 there were only 2 survivors.—T.E.G.R.

PEGREFFI, G., QUESADA, A. & CONTINI, A. (1955). Prove di emoagglutinazione nel carbonchio ematico. (Nota 2ª). **[Haemagglutination test in anthrax.]**—*Zooprofilassi.* **10,** 475-479. [English and French summaries.] **1101**

B. anthracis in the R phase, virulent for the g. pig and rabbit, and S phase strains avirulent for the g. pig have the ability to agglutinate washed chick r.b.c. S-phase organisms virulent for the g. pig but not the rabbit fail to agglutinate washed chick r.b.c.
—I. W. JENNINGS.

JOHNSON, W. P. & PERCIVAL, R. C. (1955). **Tetracycline therapy of experimentally induced anthrax in sheep.**—*J. Amer. vet. med. Ass.* **127,** 142-144. [Authors' summary modified.] **1102**

Three doses of tetracycline (2 mg./lb. body wt.) administered i/m immediately after or 12 hours after infection, and then at 24-hour intervals, prevented anthrax in all sheep treated, as compared with death of all controls within 3–5 days.

A single dose, 24 hours after infection, protected 4 of 5 infected sheep, whilst 5 untreated animals died.

PRAWIRANATA, R. A. R. (1954). Omtrent de gevoeligheid van anthrax bacillen voor penicilline bij de hond. **[Sensitivity of *B. anthracis* to penicillin in dogs.]**—*Hemera zoa.* **61,** 321-337. [In Dutch. English, German and Indonesian summaries.] **1103**

Three puppies, about 5 months old, were infected with *B. anthracis* and treated with daily doses of penicillin, starting immediately after infection. Doses of 50,000–300,000 units were given; the first was injected i/v and the remainder i/m. Three adult dogs, 2 years old, were infected and treated after the beginning of febrile symptoms. In the puppies results were less favourable than in the adults although none of the dogs died. P. discussed the production by *B. anthracis* of substances which inhibit penicillin *in vivo*.
—C. A. VAN DORSSEN.

BOYARSHINOV, P. K. (1954). **[Improving the methods of disinfecting skins contaminated with anthrax by pickling in hydrochloric acid.]**—*Rep. Ist Soviet Conf. vet. Disinfect.* Moscow, 1951. pp. 113-118. [In Russian.] **1104**

B. described an effective method for disinfecting skins contaminated with anthrax spores. They were first soaked for at least 48 hours in an aq. soln. of 2·4% sodium bisulphite with 8% sodium chloride. The total weight of the soln. was 5 times the wt. of the dry skins. The skins were next transferred to an equal volume of a disinfectant soln. of 5% hydrochloric acid and 12% NaCl for 30 hours at 23°C. for thin skins and 30°C. for thick hides. The process was carried out in revolving cylinders, in order to disperse air bubbles adhering to the skins. Solns. used were first heated to expel dissolved gases.
—F. A. ABBEY.

RANNEY, A. F. (1955). **Status of Federal-State cooperative tuberculosis eradication.**—*Proc. 58th Ann. Meet. U.S. live Stk sanit. Ass.*, Omaha, 1954. pp. 212-217. **1105**

In the 30 years since the introduction of the TB. eradication programme in cattle, the infection rate has been reduced from 5% to 0·11%, but in the last 3 years, there has been no reduction in the infection rate. About a tenth of the total cattle are tested annually. Too much emphasis has been laid on the number of animals tested and not enough on tracing the history of each tuberculous animal slaughtered for the market: 15% of the total reactors found during the past year were located by this means. Of the 485 herds tested during the tracing of cases with lesions, on an average 3⅓ reactors were found per herd compared with one per thousand animals in about 45 herds by routine testing. Partly because of lack of adequate identification of animals sent to market, such investigation was carried out in only 44·4% of cases.—A. ACKROYD.

CHINGAEV, I. F. (1955). **[Eradication of bovine TB. by districts.]**—*Veterinariya, Moscow.* **32,** No. 9, pp. 14-19. [In Russian.] **1106**

In the Ramensk area near Moscow a determined and successful effort has been made to eradicate TB. of cattle with a minimum of economic loss. Excretors and clinically tuberculous animals are slaughtered; reactors, isolated under close supervision, are slaughtered whenever they become excretors. Negative animals are brought into clean disinfected premises. The personnel in charge of the reactors are examined medically every month and have no contact with the tuberculin-negative animals. Attention is paid to pigs

and fowls as possible sources of infection for cattle. Reactor cows are artificially inseminated and the calves separated from them immediately after birth. Very few calves become reactors. All animals introduced into the district go into quarantine for a month and are not allowed to join a herd without a written permit from the veterinary officer.

—A. MAYR-HARTING.

PALLASKE, G. (1955). Zur pathologischen Anatomie der tuberkulösen Leptomeningitis der Rinder. **[Pathological anatomy of tuberculous leptomeningitis in cattle.]** — *Rindertuberkulose*. **4,** 193-204. **1107**

A description of the lesions of tuberculous leptomeningitis in cattle, based on examination of 30 cows with acute and chronic forms of TB. Prevalent site of the lesions is the base of the brain and the cranial and caudal extensions; perivascular infiltrations were prominent, particularly in the caseous form, and in some cases, a moderate internal hydrocephalus was observed. P. drew attention to the relatively high incidence of tuberculous leptomeningitis in cattle; he stated that, contrary to present-day belief, it is not restricted to young animals.—F. K. LEEB.

BENSON, R. E., FREMMING, B. D. & YOUNG, R. J. (1955). **A tuberculosis outbreak in a *Macaca mulatta* colony.** — *Amer. Rev. Tuberc.* **72,** 204-209. [French and Spanish summaries.] **1108**

An account of a severe outbreak of TB. in a colony of 300 rhesus monkeys at the University of Texas. Infection spread rapidly and lesions of the respiratory tract developed rapidly in affected animals. Diagnosis by means of the intradermo-palpebral tuberculin test was confirmed by P.M. examination in 63 out of 64 reactors. Radiography of the lungs was of no diagnostic value. There was no evidence of the development of tuberculin sensitivity as a result of repeated testing.

—W. R. BETT.

SCHAAF, J., GROEGER, R. & BEERWERTH, W. (1955). Die intrakutane Tuberkulinreaktion und ihre Beziehung zur pathologisch-anatomischen Verlaufsform der Rindertuberkulose. **[The intradermal tuberculin test in relation to the pathological type of the disease in cattle.]**—*Rindertuberkulose*. **4,** 86-99. **1109**

In the years 1953–54, in the abattoir at Hagen, tuberculin tests, followed by P.M. examination, were carried out on 721 tuberculous, mostly aged, cows. Of these, 240 were affected with the primary complex of the disease, of which 188 were positive reactors, 35 doubtful and 17 negative; 14 of the 17 negative reactors had old lesions. Of 38 cows in the stage of early generalization, 35 were positive reactors, 2 doubtful and one negative. Of 380 with chronic TB. of the organs, 329 were positive reactors, 41 doubtful and 10 negative, 9 of the last having latent infection. Of 63 in the stage of late generalization, 60 were positive reactors, 2 were doubtful and one negative.—M.G.G.

SCHAAF, J. (1955). Über die Zuverlässigkeit der intrakutanen Tuberkulinprobe und den Einfluss innerer und äusserer Ursachen auf ihren Ablauf. **[The reliability of the intradermal tuberculin test, and internal and external factors affecting it.]**—*Rindertuberkulose*. **4,** 33-53. **1110**

S. studied the factors affecting the tuberculin reaction in 5,815 slaughter cattle, about half of which were also examined P.M. Increasing age appeared to reduce, and pregnancy slightly to increase specific and non-specific reactivity. Of 868 cattle 26 yielded false negative and 24 false positive reactions. During an eradication campaign TB. was confirmed P.M. in 3,128 of 3,452 reactors. It is stated that about one third of the apparently faulty reactions was due to failure to recognize slight P.M. lesions.

Site, technique and sex appeared to have no effect; results in steers, however, were inconsistent.—E.G.

EISSNER, G. (1955). Die Wertbemessung des Geflügel-Tuberkulins und ihre Bedeutung für die Simultanprobe. **[Evaluation of avian tuberculin with reference to the simultaneous tuberculin test.]**—*Rindertuberkulose*. **4,** 133-146. **1111**

AV.Tub.1, a preparation used as a standard avian tuberculin in Germany, was standardized against Weybridge standard avian tuberculin containing 2 mg. per ml. and equal to a titre of 100,000 tuberculin units (T.U.)/ml.

In the final tests, strain D_4 Weybridge (Tb 57) was used to infect g. pigs weighing 300 g., care being taken to maintain the wt. of the animals constant throughout the tests. Each was injected s/c with 0·5 ml. of a suspension containing 1 mg. bacteria per unit ml. physiological saline. From extensive tests involving 139 single measurements, an average value of 31,000 T.U./ml. was estimated.

Deviations from these results, when other strains of tubercle bacilli were used, could be traced to differences in their allergic properties. E. concluded that the standardization of a commercial preparation will have to be based on the results obtained in practice over a certain trial period.—F. K. Leeb.

Shchepilov, N. S. (1955). **[Tuberculin testing of geese and ducks.]**—*Veterinariya, Moscow.* **32,** No. 9, pp. 43-46. [In Russian.] **1112**

On a poultry farm where geese and ducks were kept with the hens, heavy losses of fowls due to TB. occurred. Tuberculin testing of 60 geese by i/d injection under the jaw revealed 11 reactors. In 2 which were killed, tuberculous foci were found in the liver. Several months later, 8 out of 79 tuberculin-tested geese and 13 out of 413 ducks were positive. All were killed and tuberculous foci were found. Two of the goose strains were tested in rabbits and g. pigs, and found to be pathogenic for both.—A. Mayr-Harting.

Yamaguchi, M., Nemoto, H., Azuma, R. & Kawanishi, Y. (1955). **[Various sensitizing routes in experimental animals used for tuberculin potency assay.]** — *Exp. Rep. Govt exp. Sta. Anim. Hyg., Japan.* No. 29, pp. 337-342. [In Japanese.] pp. 343-348. [In English.] **1113**

The rabbit is considered suitable for the biological assay of tuberculin, the sensitizing dose (1 mg.) being injected intratesticularly.

—T.E.G.R.

Schimizu, K. (1954). **Preliminary investigations on complement-fixing antigens in bovine tuberculosis.**—*Jap. J. vet. Res.* **2,** 157-167. [In English.] **1114**

Preliminary work indicated that the best antigen for the complement-fixation test for bovine TB. was prepared from the supernatant fluid of suspensions of tubercle bacilli which had been boiled for 10 min.—R.M.

Speck, J. & Dedié, K. (1955). Die Diagnose der Fleischfressertuberkulose mittels der Hämagglutination. **[Diagnosis of TB. in carnivores by means of haemagglutination.]** —*Rindertuberkulose.* **4,** 204-211. **1115**

A slightly modified haemagglutination test proved satisfactory for the diagnosis of TB. in carnivores. Using 114 foxes and 13 dogs, the authors showed that titres of 1 : 40 were doubtful, 1 : 80 suspicious, and higher titres positive. Observations on two artificially infected bitches confirmed these findings. In two of the 13 dogs, the results of the haemagglutination test differed from those of the tuberculin test, but P.M. examination confirmed the haemagglutination test.

—F. K. Leeb.

Posokhin, E. G. (1954). **[Methods of rendering harmless soil infected with tubercle bacilli.]**—*Rep. Ist Soviet Conf. vet. Disinfect.* Moscow, 1951. pp 79-84. [In Russian.] **1116**

Soil samples were taken at regular intervals for a period of 2 years after artificial infection of an area of soil, exposed to the climate of Western Siberia, with cultures of bovine and avian strains of tubercle bacilli. During this period, organisms were recovered from a depth of 2–12 cm., and were invariably virulent. The most virulent organisms were recovered from a depth of 6 cm.

The following preventive measures were recommended :— soil in farm yards should be swept clean of faeces, stamped hard, and disinfected with quicklime. Soil in areas where cattle and fowls were concentrated should be lifted for a depth of 20 cm., the exposed surface disinfected with quicklime, and covered again by 20 cm. depth of clean soil. Larger areas should be ploughed to a depth of 30 cm., harrowed many times, and sown with grass in the following year. Untreated soil should be left fallow for at least two years.

—F. A. Abbey.

Schellner, H. & Gaggermeier, G. (1955). Erfahrungen mit Schutzimpfungen nach Gräub in tbc-infizierten Rinderbeständen unter praxisnahen Verhältnissen. **[Vaccination of cattle in herds infected with TB. with the "strain P" tubercle bacillus described by Gräub.]**—*Rindertuberkulose.* **4,** 75-78. **1117**

"Strain P" vaccine was tested from 1950 on 28 herds of cattle severely infected with TB. Complete success was met in herds where calves were treated by the method prescribed by Gräub :— inoculation 1–3 days after birth, segregation of the calves for about 6 weeks until immunity developed, inoculation twice a year for the first 2 years, later only once a year.—M.G.G.

Steele, J. H. (1955). **The present status of bovine-type human tuberculosis in the United States.**—*Proc. 58th Ann. Meet. U.S. live Stk sanit. Ass.*, Omaha, 1954. pp. 207-211. **1118**

In the U.S.A., bovine type infections are exceedingly rare in man. Apart from an out-

break in children in Ohio in 1948, only 6 isolated cases, 3 of them of the pulmonary form and all except one in adults, have been reported.—A. Ackroyd.

O'Neill, E. F. & Favour, C. B. (1955). **Tissue culture analysis of tuberculin hypersensitivity in man.**—*Amer. Rev. Tuberc.* **72,** 577-600. [French and Spanish summaries. Authors' summary modified.] **1119**

A modified tissue culture technique employing peripheral blood leucocytes contained in capillary tubes was used to study the tuberculin allergy of human TB. *in vitro*. Results were compared and contrasted with similar studies on tuberculin allergy in experimental animals. It was found that *in vitro* observations of many types did not support the widely held belief that all cells of the tuberculous host are tuberculin-sensitive. Rather was it found that tuberculin sensitivity, both *in vitro* and *in vivo*, is mediated by cells derived from the reticulum system. Under some circumstances, *in vitro* sensitivity depends on these cells. Under other circumstances, factors present in the plasma mediate *in vitro* tuberculin sensitivity as well. Various discrepancies exist between the degree of cutaneous tuberculin allergy and tissue culture allergy in a given host. It is suggested that tuberculin cytotoxicity observed *in vitro* is that portion only of the tuberculin reaction *in vivo* which is specific. It is this limited specific toxic effect, however, which triggers into action complex non-specific focal inflammatory changes. These in turn mobilize both cells and humoral factors which further augment the local tuberculin reaction.

Nassau, E. & Hamilton, G. M. (1955). **Multiple drug resistance and virulence of *Mycobacterium tuberculosis*. A preliminary communication.** — *Tubercle, Lond.* **36,** 281-282. **1120**

The association of virulence with a catalase-positive reaction, particularly for *iso*-nicotinic acid hydrazide—(isoniazide) resistant *M. tuberculosis*, has been used as a criterion in that on inoculation into g. pigs resistant catalase-positive strains were virulent but negative strains were avirulent. Although concurrent streptomycin resistance has little influence on loss of catalase activity of isoniazid-resistant organisms, resistance to *p*-amino salicylic acid tends to produce catalase positive, and presumably fully virulent organisms. These kinds of effect may explain failure of treatment in cases given combined therapy.—Malcolm Woodbine.

Desbordes, J., Fournier, E. & Alix, D. (1955). Action des substances colorantes sur les mycobactéries. V. Influence de l'agitation sur la fixation des colorants. **[Action of stains on mycobacteria. V. Influence of shaking on the fixation of stains.]**—*Ann. Inst. Pasteur.* **89,** 471-473. **1121**

Experiments on the staining of various mycobacteria showed that shaking of the preparation at each stage of the staining process speeded up and intensified the staining reaction.—I. W. Jennings.

van der Schaaf, A. & Zantinga, J. T. (1955). Over de ziekte van Johne, in het bijzonder de diagnostiek. **[Johne's disease with special reference to diagnosis.]**—*Tijdschr. Diergeneesk.* **80,** 1002-1019. [English, French and German summaries.] **1122**

The estimated annual financial loss caused by Johne's disease in the Netherlands is 2,500,000 guilders (about £235,000). The authors compared the results of microscopic examination of faeces, the johnin test, and the complement-fixation test described by Hole [*V.B.* **24,** 1777 & 2213] with the results of P.M. examination. Out of 179 TB.-free cattle with lesions of the disease, 152 reacted to the c.f. test; *M. johnei* was seen in the faeces of 48 of the 179. With the johnin test, lesions were present in only 94 out of 163 reactors to the test, and 30 out of 118 cattle with lesions did not react to the test.—R.M.

Krause, D. (1954). Die Diagnose der Paratuberkulose des Rindes mittels der Komplementbindungsreaktion. **[Complement-fixation reaction in Johne's disease.]** — *Inaug. Diss., Hanover.* pp. 36. **1123**

A slightly modified form of the c.f. test described by Hole was used in 5 groups of cattle. (1) Of 131 cattle free from TB. and from Johne's disease 120 were negative, 6 positive, and 4 doubtful. (2) Of 101 tuberculin-positive cattle from a farm free from Johne's disease 46 were negative, 24 positive, 22 weakly positive, and 9 doubtful reactors to the c.f. test. (3) Of 47 tuberculin-positive cattle which had been vaccinated with a live culture of *M. johnei* 10 months earlier during an outbreak, 36 were positive, 4 weakly positive, 3 doubtful, and 4 negative to the test. (4) Of 47 tuberculin-negative cattle similarly

vaccinated, from the same farm, 20 were positive, 8 weakly positive, 4 doubtful, and 15 negative. (5) Of 8 cattle with clin. symptoms of Johne's disease 7 were positive, and one weakly positive. P.M. examination revealed typical lesions in the small intestine in the positive reactors. These findings confirmed that the c.f. test is of value for diagnosis of Johne's disease in cattle free from TB. In clin. cases the test is superior to the allergic reaction.—F. K. Leeb.

Olds, R. J. & Lewis, F. A. (1955). **Melioidosis in a pig.**—*Aust. vet. J.* **31,** 273-274. [Authors' summary modified.] **1124**

Pfeifferella whitmori was isolated from abscesses in lymph nodes, lungs and liver of a pig. Abscesses were also found in spleen and tonsil. This is believed to be the first recorded case of acute pyaemic melioidosis in a pig.

Asplin, F. D. (1955). **A septicaemic disease of ducklings.** — *Vet. Rec.* **67,** 854-858. [Author's summary modified.] **1125**

A Gram-negative, pleomorphic bacillus having characters similar to those described in the U.S.A. for an organism named *Pfeifferella anatipestifer* [*V.B.* **3,** pp. 178–179 and **9,** p. 7] was isolated from diseased ducks in 6 flocks. Ducklings inoculated i/p or i/m with cultures of this organism regularly developed a disease similar to that seen in the field. The onset of symptoms could be prevented by dosing with sulphadimidine. Ducklings injected with cultures and dosed with sulphadimidine were resistant to re-infection with the same strain. An ornithosis-like virus was isolated from ducklings of 2 flocks, and a small cocco-bacillary organism having pathogenic potentialities was isolated from a duck from one outbreak. Neither of these organisms is believed to have played an important role in the outbreaks.

Taylor, J. R. E. (1955). **Studies on infectious serositis of ducks in Canada.**—*Proc. 27th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.*, Durham, New Hampshire, June 14-15, 1955. pp. 4. **1126**

T. discussed the literature and confirmed the presence of this disease in Canada. Isolation of the causal organism, *Pfeifferella anatipestifer,* was best accomplished from infected brain, using 40% CO_2 and streaking the plates with *Staphylococcus aureus.* In an uncontrolled field trial oxytetracycline in oil was of value in checking losses.—D. Luke.

Jansen, J., van Dorssen, C. A. & Frederik, G. H. (1956). Deformerende arthritis en periarthritis door erysipelothrix rhusiopathiae-infectie bij jonge varkens. **[Deformative arthritis and periarthritis in young pigs caused by *E. rhusiopathiae.*]**—*Tijdschr. Diergeneesk.* **81,** 55-62. [In Dutch. English, French and German summaries.] **1127**

Inflammation of the carpal and tarsal joints was observed in 11 pigs aged 10 weeks. Radiographs (reproduced in the text) revealed the presence of deformative arthritis. *E. rhusiopathiae* was isolated in pure culture from the synovial fluid of affected joints.

—R.M.

Rostovtseva, I. A. (1955). **[Trials with new vaccines against swine erysipelas.]**—*Veterinariya, Moscow.* **32,** No. 6, pp. 32-38. [In Russian.] **1128**

This is the summary of a meeting called to assess the value of four live vaccines against swine erysipelas, prepared by the following establishments:

(1) NIVOS of Voronezh. This vaccine is suspended in a semi-solid medium to which glycerol is added. The avirulent variant, used recently, is more satisfactory than that used some years ago. The immunity, after two injections, lasts about 8–10 months.

(2) Biofabrika of Dniepropetrovsk. This strain is grown on solid medium, washed off with glycerol, and precipitated with aluminium hydroxide in a phosphate buffer. The vaccine conferred a strong long-lasting immunity, but severe reactions occurred.

(3) VIEV. Grown in semi-solid medium. Vaccination reactions were few and mild; the reports on the immunity obtained were contradictory, but it appeared on the whole, to be insufficient.

(4) Biofabrika of Krasnodarsk. In semi-solid medium. It was effective, but cases of swine erysipelas after vaccination had been observed. It had not been in use sufficiently long to judge.—A. Mayr-Harting.

Gelenczei, E. & Rappay, D. (1955). Hyperimmunisierung von Pferden mit Rotlaufbazillenstämmen des A und B Typs. **[Hyperimmunization of horses with *Erysipelothrix rhusiopathiae* Types A and B.]**—*Acta vet. hung.* **5,** 1-9. [In German. Russian summary.] **1129**

Live B strains of *E. rhusiopathiae* produce within a short time more potent erysipelas sera than do A strains. Being less

virulent, they are less harmful, and the serum donor can therefore be used for a long period. Sera obtained from B strains are not type-specific and are equally effective in A and B strain infections.—W. R. Bett.

Schneider, B. H., Spencer, G. R. & Ensminger, M. E. (1955). **Antibiotic feeding for prophylaxis of experimentally produced swine erysipelas.**—*J. Anim. Sci.* **14,** 1140-1145. [Authors' summary modified.] **1130**

Swine erysipelas was successfully produced in weaned piglets by the dermal scratch method. Penicillin or oxytetracycline given at the rate of 15 mg./lb. of feed had no curative effect.

Penicillin given at the rate of 40 mg./lb. of feed failed also to inhibit the symptoms and lesions of erysipelas. The penicillin-fed pigs gained an average of 1·62 lb. daily, while those on a penicillin-free ration gained only 1·52 lb. per pig daily. This difference was significant (P less than 0·05).

Wix, P. & Woodbine, M. (1955). **Microbiological aspects of the swine erysipelas organism, *Erysipelothrix rhusiopathiae*.** — *Brit. vet. J.* **111,** 432-439. **1131**

The authors studied the biochemical and cultural properties of 44 strains of *E. rhusiopathiae,* and their sensitivity to antibiotics *in vitro.* Streptomycin, chloramphenicol, or polymyxin had no effect on the organism at concentrations of up to 2 μg. per ml. Terramycin or bacitracin had a slight antibacterial action. Only penicillin and erythromycin completely inhibited the organism for up to 7 days, the former at a conc. of 0·03–0·1 units per ml. and the latter at a conc. of 0·1–0·5 μg. per ml.—R.M.

Ewald, F. W. (1955). Über die Dissoziation von Erysipelothrix rhusiopathiae. (II. Mitteilung). Über die Veränderungen der Antigenstruktur im Verlauf der Dissoziation bei Rotlaufbakterien. **[Dissociation of *E. rhusiopathiae*. II. Changes in antigenic structure in the course of dissociation.]**—*Mh. Tierheilk.* **7,** 109-119. **1132**

E. studied the "O" (serologically complete) and "o" (dissociated variant) forms of three strains of *E. rhusiopathiae* of antigenic types A, B and N respectively. Dissociation was accompanied by a loss of type-specific antigen and a reduction in agglutinogenic activity.—F. K. Leeb.

Chepaev, I. P., Zin'kova, Z. V. & Gordienko, L. F. (1955). **[Treatment of *Listeria* infection in pigs.]**—*Veterinariya, Moscow.* **32,** No. 9, pp. 41-43. [In Russian.] **1133**

In the course of outbreaks of *Erysipelothrix (Listeria) monocytogenes* infection on 2 pig farms, penicillin or sulphonamide therapy was ineffective; treatment with "miarsenol" [composition not given] was highly effective.—A. Mayr-Harting.

Nikiforova, N. M. (1953). **[Active immunization in pasteurellosis in farm animals.]**—*Trud. nauchno-kontrol. Inst. vet. Preparatov.* **4,** 338-353. [In Russian.] **1134**

An alum-precipitated vaccine was prepared from immunogenic strains of pasteurella obtained from cattle, sheep and pigs. On farms infected with pasteurella, 140,000 cattle, sheep and pigs were given two injections of the vaccine, the second injection 10–20 days after the first. In further experiments 20,000 cattle were each given a single dose of the vaccine. In both cases the animals were immune for at least 6 months after inoculation. —R.M.

Zhigaĭlov, L. S. (1955). **[Intratracheal administration of penicillin in broncho-pneumonia in calves.]**—*Veterinariya, Moscow.* **32,** No. 10. pp. 67-68. [In Russian.] **1135**

After local anaesthesia of the trachea with 5 ml. procaine hydrochloride affected calves are given 300,000 units penicillin in 8–10 ml. saline once in 24 hours. Usually dosage has to be repeated, sometimes up to 4 times or more. The animals are kept in a dry airy shed, their diet being supplemented with vitamin A and minerals and, in the case of unweaned calves, with fresh cream. Hens' eggs are fed to animals showing symptoms of dyspepsia. —A. Mayr-Harting.

Hall, W. J., Heddleston, K. L., Legenhausen, D. H. & Hughes, R. W. (1955). **Studies on pasteurellosis. I. A new species of *Pasteurella* encountered in chronic fowl cholera.**—*Proc. 27th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.*, Durham, New Hampshire, June 14-15, 1955. pp. 7. **1136**

A new species of *Pasteurella* was isolated from fowls affected with fowl cholera and from others with inflammation of the upper respiratory tract. The authors proposed to name it *Past. gallinarum.*—D. Luke.

Deubler, M. J. & Cole, E. J. (1955). **Preliminary studies on *Pseudomonas* mastitis.**—*Amer. J. vet. Res.* **16,** 511-514. **1137**

2,629 quarter-milk samples were examined bacteriologically. The identification of bacteria of the *Pseudomonas* group can be confusing since many investigators classify only the strains producing chloroform-soluble pigment as *Ps. pyocyanea*. Many strains, however, do not possess, or have lost, the ability to produce pigment. Blood and milk serum agglutination titres for *Pseudomonas* may be of value in diagnosing *Pseudomonas* infection. Chloramphenicol, polymyxin B, and neomycin are the antibiotics of choice for clinical trials.

—W. R. Bett.

Baier, W., Leidl, W., Mahrla, A. & Schrödl, M. (1955). Möglichkeiten der Bekämpfung der Pseudomoniasis genitalis bei Besamungsbullen. **[Possibilities for the control of *Pseudomonas* infection of the genital organs of bulls used for artificial insemination.]**—*Fortpflanzung*. **5,** 1-3. **1138**

Bacteriological examination of the semen of 8 bulls disseminating *Pseudomonas* revealed that 50 μg. polymyxin/ml. diluent was sufficient to inhibit the growth of *Ps. pyocyanea*. To semen of 22 bulls, including 10 *Pseudomonas* bearers, was added a mixture of penicillin, streptomycin and polymyxin and following this treatment in practically all cases no bacteria at all could be cultivated. Treatment of 13 *Pseudomonas* infected bulls by washing the prepuce with polymyxin was apparently effective in all cases but in 7 cases re-infection occurred.—Hugh Boyd.

Newton, O. M. & Newton, O. F. (1954). La cortisona como tratamiento en las queratoconjuntivitis de los bovinos. **[Cortisone in treatment of bovine infectious conjunctivitis.]** —*Gac. vet., B. Aires*. **16,** No. 87, pp. 9-11. **1139**

Cortisone in saline suspension was used in cases of bovine infectious conjunctivitis at Palermo Cattle Show: 4–5 drops of cortisone suspension were instilled, followed by a second application 5 hours later. The following morning there was considerable improvement; treatment was repeated and the condition cleared up completely within 24 hours of the first application. A fourth instillation was necessary in only one case. The same treatment cured two cases of traumatic lesions of the eyes.—T.E.G.R.

Aehnelt, E. & Krause, D. (1955). Zur Coli-Mastitis beim Rind. **[*Bact. coli* mastitis in the cow.]**—*Dtsch. tierärztl. Wschr*. **62,** 211-216. **1140**

Bact. coli mastitis was most common in freshly-calved cows during the winter months. In the majority of cases the inflammatory reaction was of an acute parenchymatous type. Intramammary application of terramycin, aureomycin, leucomycin or "supronal" gave satisfactory results, but the authors suggested that the sensitivity of the causal organism to these drugs should always be tested.

—W. G. Siller.

Linssen, H. (1955). Beitrag zur Behandlung der Coli-Mastitis des Rindes. **[Treatment of *Bact. coli* mastitis in cattle.]**—*Tierärztl. Umsch*. **10,** 295-296. **1141**

L. described 3 methods for the treatment of *Bact. coli* mastitis in cattle using (a) infusion with 50 to 100 ml. "supronal" emulsion, repeated at 12-hourly intervals for 3 days, (b) "supronal" emulsion supported by penicillin-streptomycin treatment and, if no improvement results from either of these methods within 36–48 hours (c) combined treatment with "supronal" infusions and aureomycin. Of 120 cases treated in 1954, 80% were cured, and 15% had to be destroyed for various reasons. The remaining 5% which did not respond to any treatment developed the peracute form and had also to be destroyed.

L. is of the opinion that about 75% of affected quarters can be cured with "supronal" emulsion if treatment is started at an early stage. It is, however, difficult to say whether the milk production of the cured animal will return to its normal level.—F. K. Leeb.

Barr, F. S., Carman, P. E. & Clarkson, T. B. (1955). **Resistance of calf scour-producing organisms to broad spectrum antibiotics.** —*Amer. J. vet. Res*. **16,** 515-516. **1142**

A cross-resistance pattern to the tetracycline group of antibiotics existed in 5 organisms isolated from calf scours. A synergistic action was evident when neomycin was used with polymyxin B.—W. R. Bett.

Subbotin, V. M. (1955). **[Pathogenesis and treatment of paratyphoid in calves.]** —*Veterinariya, Moscow*. **32,** No. 10. pp. 42-45. [In Russian.] **1143**

Sintomycin which has a bacteriostatic action on pathogens of the *Salmonella* group, was found very effective for the treatment of calf paratyphoid: 0·02–0·03 g. per kg. body wt. was given orally, 4 times a day. To prevent relapses, treatment must be continued for some days after clinical cure. Only one calf was lost out of 60; the rest developed at the

same rate as healthy calves. "Sulzimid", a sulphonamide, was found active in acute cases, but did not lead to complete cure in subacute and chronic cases.—A. MAYR-HARTING.

ANON. (1955). **Salmonella in carcass meat for human consumption. A report by the Salmonella Sub-Committee of the Public Health Laboratory Service.**—*Mon. Bull. Minist. Hlth Lab. Serv.* **14,** 132-138. **1144**

During 1950–53 material from carcasses from abattoirs in 6 urban areas in England was cultured for salmonella. The results from all six laboratories indicated isolations from: 6 out of 952 samples of bile; 3 out of 1,146 peritoneal swabs; one out of 1,157 livers; one out of 714 spleens; 2 out of 520 lymph nodes. From cattle, 42 strains of *S. dublin* and 3 strains of *S. typhi-murium* were isolated, and from pigs 9 strains of *S. dublin,* one of *S. typhi-murium* and one of *S. anatum.*

—MALCOLM WOODBINE.

TAROVERDOV, L. N. (1954). **[Peat bedding as a measure against *Salmonella enteritidis* infection.]** — *Rep. Ist Soviet Conf. vet. Disinfect.* Moscow, 1951. pp. 91-94. [In Russian.] **1145**

Peat contained at least 5 types of microflora antagonistic to various pathogenic microorganisms, including *S. enteritidis.* Its acidity also had a bactericidal effect. A mixture of peat with dung was more bactericidal than peat alone; this property was absent after sterilization by heat.—F. A. ABBEY.

KRÁL, J. (1955). Typisace *Salmonelly cholerae suis* bakteriofágem. **[Typing of *S. cholerae-suis* by bacteriophage.]**—*Sborn. čes. Akad. zeměděl sk. Věd, Živoč. Výr.* **28,** 347-352. [In Czech. English and Russian summaries.] **1146**

Two strains of bacteriophage isolated from pig faeces produced lysis in *Salmonella cholerae-suis* and *S. cholerae-suis* var. *kunzendorf* strains. Of 671 salmonella strains 79 were identified by this method as *S. cholerae-suis* which agreed with results obtained by serological and biochemical methods. The diagnostic value of these experiments is discussed.—E.G.

PATERSON, J. S. & COOK, R. (1955). **Naturally occurring *Salmonella limete* infection in guinea-pigs.** — *J. Path. Bact.* **70,** 242-246. **1147**

Seven cases are reported of natural infection of g. pigs with *S. limete.* The majority were detected only by routine palpation of the mesenteric lymph nodes. In young animals there was pure infection; in older animals there was a complicating mould infection *(Absidia). S. limete* infection is not a serious hazard in the rearing of g. pigs.

—W. R. BETT.

VAN ROEKEL, H. (1955). **Future progress in pullorum disease eradication.**—*Proc. 27th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.,* Durham, New Hampshire, June 14-15, 1955. pp. 4. **1148**

The author discussed the growth of the present pullorum eradication scheme and made certain proposals for the complete eradication of the disease.—D. LUKE.

ANON. (1955). **Report of the antigen committee.** —*Proc. 27th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.,* Durham, New Hampshire, June 14-15, 1955. pp. 7. **1149**

From the different participitating laboratories the committee collects samples of antigen, and subcultures of antigen strains. The fermentation reactions of the various strains are checked. The antigens are checked against a variety of known sera. In addition information is obtained regarding the incidence of variant strains of *S. pullorum* and of other *Salmonella* isolated from tested flocks.—D. LUKE.

BRILL, J. & GOŁĘBIOWSKI, S. (1955). Braki i błędy diagnostyki serologicznej pulorozy. **[Errors in the serological diagnosis of pullorum disease.]** — *Roczn. Nauk rol.* Ser. E. **67,** 25-45. [In Polish. English and Russian summaries.] **1150**

The serological diagnosis of pullorum disease fails to detect every carrier of this disease. Possible errors which may occur are:— (1) Error due to the so-called phenomenon of the inhibitory zone. (2) The inconsistency of agglutination titre of the sera of infected birds may result in error and calls for repeated examinations. (3) The selection of strains for the preparation of the antigen must be based on detailed examination of antigenic structure of the standard strains employed. This should correspond to the formula: I, IX, XII_1, XII_2, XII_3. Special attention should be given to the presence of XII_2 which is not present in all strains. The strains employed must be in the smooth phase. (4) The suspensions should be thoroughly tested and special attention directed to the methods of maintaining standard strains. (5) In some outbreaks a variant of *S. pullorum,*

having an altered antigenic structure, was isolated. Carriers of this variant could be detected only with suspensions prepared from these strains. Diarrhoea in chicks may be caused by other types of *Salmonella*, especially *S. bareilly* and *S. thompson*.—M. GITTER.

WILLIAMS, J. E. & HARRIS, M. E. (1955). **A simplified method for typing *Salmonella pullorum* cultures.**—*J. Amer. vet. med. Ass.* **127,** 133-136. [Authors' summary modified.] **1151**

A simplified sedimentation test for differentiating standard, variant, and intermediate antigenic types of *S. pullorum* is described. The method is based on the relative flocculating and sedimenting effect of an aq. soln. of ammonium sulphate (330 g./l.) on suspensions of the organisms in formolized saline. It is more adaptable for routine use than conventional serological procedures and should encourage the more universal typing of *S. pullorum* cultures by poultry diagnostic laboratories.

WILSON, J. E. (1955). **The use of furazolidone in the treatment of infections of day-old chicks with *S. pullorum*, *S. gallinarum*, *S. typhi-murium* and *S. thompson*.**—*Vet. Rec.* **67,** 849-853. [Author's summary slightly modified.] **1152**

Treatment with furazolidone, 0·02% in the diet, prevented deaths in groups of young chicks artificially infected with *S. pullorum* and *S. gallinarum*, but breakdowns occurred later. Better results were obtained with double the concentration (0·04%). When treatment was delayed until deaths occurred it was less effective but still resulted in a significant reduction in mortality. Furazolidone was superior to sulphaquinoxaline not only in preventing mortality but in reducing the number of carriers in surviving birds. Results in infection with *S. typhi-murium* and *S. thompson* were promising but not conclusive.

GEURDEN, L. M. G. & DEVOS, A. (1955). Verdere onderzoekingen over S. new-brunswick-infectie bij pluimvee. **[Further investigations into *S. new brunswick* infection in fowls.]** — *Vlaam. diergeneesk. Tijdschr.* **24,** 201-204. [In Flemish. English, French and German summaries.] **1153**

This is a continuation of an investigation into *S. new brunswick* infection in young chicks [see also *V.B.* **26,** 742]. Serological examination of 3 flocks of adult fowls of American origin revealed positive titres to this organism and *S. pullorum* in 2 of them. The authors concluded that in most cases *S. new brunswick* was transmitted through the egg, and that its pathogenicity was enhanced by concurrent infection with *S. pullorum*. They pointed out the danger of using infected eggs for human consumption and for diluting bull semen.—R.M.

VAN DORSSEN, C. A. (1955). Salmonella typhimurium typen uit duiven. **[*S. typhi-murium* types from pigeons.]** — *Tijdschr. Diergeneesk.* **80,** 1188-1201. [English, French and German summaries.] **1154**

The author examined the biochemical properties and the antigenic formula of 223 strains of *S. typhi-murium* isolated from pigeons. He concluded that they did not differ from strains of human or animal origin. None conformed with *S. typhi-murium* var. *storrs* as described by Edwards [*V.B.* **7,** pp. 159 and 209].—R.M.

HESS, E. (1955). Un sistema razionale di lotta contro la brucellosi bovina. **[A rational method for the control of bovine brucellosis.]** —*Clin. vet., Milano.* **78,** 14-20. **1155**

The control of brucellosis in the Canton of Zürich is based on the slaughter of cows excreting the organism in the milk or from the uterus. For the detection of the former, bulk samples of milk are subjected to the ring test and when this is positive resort is made to bacteriological tests of milk from individual cows. Bacteriological tests are carried out in the case of aborting cows. Owners of slaughtered cows are compensated up to 80% of the market value subject to the following conditions:— isolation of cows on the premises where parturition and abortion have taken place; thorough and frequent disinfection of the byre pending results of bacteriological tests; purchase of animals only from dairies known to be free from infection; and vaccination of heifers between the ages of 6 and 12 months with attenuated vaccines, *e.g.*, *Br. abortus* Strain 19.—T.E.G.R.

LIPNICKI, J. (1955). Rozważanie nad zwalczaniem brucelozy bydła w Polsce przy pomocy szczepionki S 19. **[Control of brucellosis in Poland using Strain 19.]**— *Méd. vét., Varsovie.* **11,** 656-660. [In Polish.] **1156**

Control of brucellosis in Poland is based on vaccination with Strain 19 and elimination of infected animals: 209,337 animals have been vaccinated since 1948. Results have been

satisfactory as abortions caused by *Br. abortus* are now very rare. L. emphasized the importance of eradication of the disease and recommended control measures to protect disease-free herds and to increase their numbers. He suggested that in herds where up to 30% of animals are infected the disease can be eradicated in 5–6 years by gradual elimination, blood testing and vaccination. In herds where more than 30% are infected, self-cure could be obtained in 4 years provided strict control measures were adopted. Such measures would, however, be uneconomical in herds not heavily infected.—M. GITTER.

GOODE, E. R., JR., AMERAULT, T. E. & MANTHEI, C. A. (1955). **Relationship of sero-agglutinin titers to udder infection in Strain 19 vaccinated cattle.**—*Proc. 58th Ann. Meet. U.S. live Stk sanit. Ass.*, Omaha, 1954. pp. 180-190. **1157**

Brucella abortus was isolated from the milk of 5% of 637 cattle that had been vaccinated with Strain 19 during calfhood, and from that of 21% of 103 unvaccinated cattle. The percentage of isolations from non-vaccinated cattle was 2–4 times greater than that from vaccinated cattle at each serum agglutinin titre, except for titres higher than 1 : 200, in which case the percentage was the same in each group. Most of the isolations (98%) were from herds which contained one or more animals with agglutinin titres of 1 : 200 or higher. The milk ring test on vaccinated herds identified 94% of cattle that were bacteriologically positive and 79% of those that were negative, whilst the whey agglutination test correctly identified 81% of the positive cattle and 84% of the negative. The authors suggested a new interpretation for the blood agglutination test for vaccinated cattle. The diagnostic titre should be 1 : 100 and above for unvaccinated cattle, and one dilution higher (1 : 200 and above) for vaccinated cattle.—A. ACKROYD.

I. ANON. (1955). **New interpretation of test for brucellosis in vaccinated cattle.**—*Situat. Rep. Agric. res. Serv. U.S. Dep. Agric.* No. ARS 22-11. pp. 5. **1158**

II. ANON. (1955). **The expanded bovine brucellosis eradication program.**—*Prog. Rep. Agric. res. Serv. U.S. Dep. Agric.* No. ARS 22-14. pp. 5. **1159**

I. An account of the officially adopted method for interpreting the results of the blood agglutination test when applied to vaccinated cattle, based on that described by Goode *et al.* [see preceding abst.].

II. Progress has been made in the control of bovine brucellosis in the U.S.A. during the first 5 months after the introduction of a new eradication programme. The new interpretation of the agglutination test for vaccinated cattle, as described above, is employed.—R.M.

TUZOVA, P. V. (1955). **[Results of trial of *Br. abortus* Strain 68 vaccine against bovine brucellosis in White Russia.]**—*Veterinariya, Moscow.* **32,** No. 7, pp. 43-47. [In Russian.] **1160**

During the period 1952–54, 3,388 cattle were inoculated with *Br. abortus* Strain 68. The vaccine proved to be safe and effective: vaccinated animals developed agglutination titres of 1 : 200–1 : 3,200, which persisted for 9–12 months or sometimes longer. Only 40–70% of the cattle gave a positive complement-fixation test, and this occurred only for 2–4 months after inoculation. The allergic skin reaction using brucella hydrolysate and the ophthalmic reaction using brucella allergen were both negative in vaccinated cattle. By these tests it was possible to distinguish vaccinated from naturally infected cattle.

—A. MAYR-HARTING.

SCHOENAERS, F. & KAECKENBEECK, A. (1955). Vaccination antibrucellique chez la vache au moyen du vaccin M. Deuxième note. **[Vaccination of cattle with *Brucella* M. vaccine. II.]**—*Ann. Méd. vét.* **99,** 239-247. **1161**

The authors confirmed the results of previous experiments [*V.B.* **24,** 1020 and **25,** 305] in which vaccination of cattle with *Brucella* M vaccine gave unsatisfactory protection against *Br. abortus* infection.

—A. SEAMAN.

BOZHKO, G. K. (1954). **[Diagnosis of *Brucella* infection in cattle.]**—*Veterinariya, Moscow.* **31,** No. 5, pp. 35-36. [In Russian.] **1162**

B. stated that the ophthalmic (conjunctival) test with brucella allergen is simple, specific, and gives reactions even in animals that have ceased to give positive reactions to the agglutination or complement-fixation tests. It sometimes fails in recent infections and should therefore always be used in conjunction with serological tests.—A. MAYR-HARTING.

OTTOSEN, H. E. & PLUM, N. (1955). **Studies on the applicability of the intradermal brucellosis test.**—*Nord. VetMed.* **7,** 497-535.

[In English. German and Danish summaries.] **1163**

The results of i/d tests on 6 heifers experimentally infected with *Brucella abortus;* on 3 infected herds, and on two newly infected herds were compared with those of the agglutination and milk ring tests. The i/d test was considered to be of value in determining the spread of infection in newly infected herds and, combined with the milk ring test, in the routine supervision of brucellosis-free herds.

—M.G.G.

ERBIN, I. E. (1955). Recherches sur le diagnostic des brucelloses par "ring-test", et déterminations des agglutines sanguines par ce procédé. **[Centrifugation in the ring-test for brucellosis and determination of blood agglutinins by this method.]** — *Rev. Path. gén. comp.* **55,** 1139-1146. **1164**

In this improved ring-test, the author mixes the coloured antigen, serum and milk, and after 5–10 min. centrifuges the mixture for 10 min. at 1,000 r.p.m. instead of the usual incubation. This is said to give a much clearer ring in positive cases, and to avoid the false positive reactions caused by the action of the fat-globules or by the presence of contaminating bacteria in the milk.

—I. W. JENNINGS.

ROOTS, E. & STRAUCH, D. (1955). Bemerkungen zur Auswahl der Brucella-Stämme für die bundeseinheitliche Herstellung von standardisierten Antigenen für die Diagnostik der Brucellosen. **[Selection of strains for the preparation of standard *Brucella melitensis* antigens, in West Germany.** — *Berl. Münch. tierärztl. Wschr.* **68,** 355-356. **1165**

The standard antigen for the diagnosis of brucella infection contains *Br. abortus* Strain 99, *Br. suis* Strain Klatt, and *Br. melitensis* Strain 163. The latter strain, however, is not a strain of *Br. melitensis* and contains no m-antigen. For accurate diagnosis of *Br. melitensis* infection in cattle a freshly isolated strain of *Br. melitensis* rich in antigen should be used in the manufacture of standard antigen.—W. R. BETT.

BURGISSER, H. (1955). *Brucella intermedia* en Suisse. **[*Br. intermedia* in Switzerland.]** —*Schweiz. Arch. Tierheilk.* **97,** 548-550. [In French. English, German and Italian summaries.] **1166**

Examination of the antigenic properties of 4 strains of brucella isolated from ewes which had aborted revealed the presence of *Br. intermedia.* This type of organism was also present in the milk of a cow and a goat; these animals were a source of infection for human beings.—W. R. BETT.

ANON. (1955). **[Leptospirosis of farm animals. A symposium.]**—*Veterinariya, Moscow.* **32,** No. 9, pp. 46-49. [In Russian.] **1167**

A striking feature of leptospirosis in the U.S.S.R. is the widespread occurrence in cattle and buffaloes. Pigs also are heavily affected, and cases in horses have been observed. Generally, the younger the animal, the more acute is the illness. Citrated blood gives a much higher agglutination titre than serum. Blood or serum can be dried on to filter paper, where it will keep for up to a month, and can be extracted with saline for agglutination-lysis when the antigens are ready.

—A. MAYR-HARTING.

VAN DER HOEDEN, J. (1955). **The epidemiology and epizootiology of leptospirosis in Israel.** —*J. trop. Med. (Hyg.)* **58,** 202-204. **1168**

The chief reservoir host of *Leptospira grippo-typhosa* in Israel is the vole *(Microtus guentheri),* from which cattle and goats become infected. Human beings may be infected directly from cattle or goats or indirectly from soil, water or vegetation contaminated by the urine of infected animals. On the other hand, the chief reservoir hosts of *L. canicola* are dogs and jackals; and cattle, pigs and human beings commonly acquire infection from these sources.—R.M.

MORSE, E. V., ALLEN, V., POPE, E. P. & KROHN, A. (1955). **Leptospirosis in Wisconsin. II. Serological studies.**—*J. Amer. vet. med. Ass.* **127,** 422-426. **1169**

Agglutination-lysis titres for *L. pomona* were detected in the blood of cattle 56 months after the onset of leptospirosis. Diagnosis of acute leptospirosis could not be made on serological evidence alone because a considerable number of cattle retained serum titres of 1 : 100 to 1 : 10,000 for 29 months following infection. Antibodies for *L. pomona* were demonstrable in the milk whey of most cows with serum titres of 1 : 1,000 to 1 : 10,000, but not of cows with low serum titres. *i.e.,* 1 : 10 to 1 : 100. The highest whey reactions were usually observed in the case of cows which had recently experienced infection.

The advantages of vaccinating cattle in known *L. pomona*-infected herds are questioned and discussed.

YANAGAWA, R., KAWASHIMA, H. & HIROTA, E. (1955). **[Studies on the bovine leptospirosis in Japan. I. Epizootiological investigations.]** —*Exp. Rep. Govt exp. Sta. Anim. Hyg., Japan.* No. 29, pp. 261-275. [In Japanese. Abst. from English summary.] **1170**

Serological reactions to *L. hebdomadis-A, L. hebdomadis, L. icterohaemorrhagiae* and *L. bovis* were obtained in the course of an investigation in 10 cattle. *L. hebdomadis-A* was isolated from 2 cattle with haemoglobinuria. Positive serological reactions were also obtained in apparently healthy cattle. The geographical distribution of leptospira infection is discussed.—T.E.G.R.

PODGWAITE, G. D., TOURTELLOTTE, M. E., JACOBS, R. E., HELMBOLDT, C. F., EASTERBROOKS, H. L., WILLIAMS, L. F., JUNGHERR, E. L. & PLASTRIDGE, W. N. (1955). **Isolation of *Leptospira pomona* from three aborted bovine fetuses.**—*Vet. Med.* **50,** 164-165. **1171**

L. pomona was isolated from the peritoneal and thoracic fluids, but not from the stomach fluid, liver and kidneys, of 3 aborted bovine foetuses, and from the liver of a dam. Blood titres of the other 2 dams were negative at abortion, but positive 1–4 months later.

—M.G.G.

MASCARO, L. A. & VILLEGAS, C. (1955). La infección leptospirósica y la iridociclitis de los caballos. **[*Leptospira* infection and equine periodic ophthalmia.]**—*Rev. Vet. Milit., B. Aires.* **3,** 172-180. **1172**

Bacteriological tests on horses with periodic ophthalmia showed that the disease was leptospiral in origin, the organism in these cases being *L. pomona.* Seven cases followed vaccination against equine infectious encephalomyelitis, and it was thought that these were the results of a flare-up in dormant foci of leptospiral infection, following damage to the tissues by anaphylactogens and allergens. It was thought too, that the clin. manifestations of the disease, whether those of ophthalmia, meningitis, haemorrhagic jaundice and haemoglobinuria, or mixed, would depend on the localization of these latent foci of infection.

—I. W. JENNINGS.

BOHL, E. H., POWERS, T. E. & FERGUSON, L. C. (1955). **Leptospirosis in swine.**—*Proc. 58th Ann. Meet. U.S. live Stk sanit. Ass.,* Omaha, 1954. pp. 365-367. **1173**

Leptospirosis principally due to *L. pomona* has been recognized only recently in pigs in the U.S.A., but appears to be widespread. Clinical signs are slight except in the pregnant sow in which abortion may occur, or death of the new-born piglets. Experimentally, a leptospiraemia of 4–6 days' duration is followed by localization in the kidneys and elimination in the urine of the apparently healthy pigs for up to a year. The disease may be controlled by immunization, chemotherapeutic treatment of carriers, and by excluding from clean herds all animals, especially boars, which have a positive agglutination lysis test.—A. ACKROYD.

GUILLAUMIE, M., KRÉGUER, A. & GEOFFROY, M. (1955). Comparaison de différentes préparations de toxine *perfringens* A. **[Comparison of different preparations of *Cl. welchii* Type A toxin.]**—*Ann. Inst. Pasteur.* **89,** 377-393. **1174**

These experiments were carried out with several lots of toxin prepared from 3 strains of *Cl. welchii* Type A, dried after precipitation with neutral sulphate of ammonia. When the relation between the minimum lethal dose and the minimum haemolytic dose, titrated in the absence of calcium, was 20 : 1 or more, sera with low antihaemolysin θ content neutralized *in vivo* a relatively small weight of toxin. One strain of *Cl. welchii* grown in glucose broth with liver often yielded good growths of the α factor, suitable for titrating *Cl. welchii* antisera. On the other hand, toxin produced by the same strain in the presence of cholesterol was useless for titrating sera and was barely haemolytic in the absence of calcium. The authors believe that some *Cl. welchii* toxins possess the antigen η, a lethal non-necrotizing toxin, with a slight collagenase action.—I. W. JENNINGS.

MAMEDOV, A. A. (1955). **[Aetiology of bradsot in sheep in Azerbaidjan.]**—*Veterinariya, Moscow.* **32,** No. 7, pp. 47-49. [In Russian.] **1175**

Besides *Clostridium septicum,* other anaerobes seem to play a role in the aetiology of bradsot in the U.S.S.R., particularly *Cl. bifermentans* and *Cl. oedematiens.* The usual formolized vaccine prepared from *Cl. septicum* and *Cl. welchii* ought, therefore, to be complemented with other anaerobes. M. admits that, when the conditions of pasture are right, bradsot disappears whether or not the animals have been vaccinated.—A. MAYR-HARTING.

CARDA APARICI, P. C. (1955). Nuevas aportaciones al estudio del botulismo equino en

España. **[Equine botulism in Spain.]**—*Bol. Cons. Col. vet. Esp. Supl. cient.* **9,** 173-186. **1176**

A detailed description including the results of examination of blood, urine and c.s.f. of two cases of "infectious paraplegia" of horses. An acute case was slaughtered and from gastro-intestinal contents and liver was obtained a toxin lethal for g. pigs and neutralizable by botulinus Type C antiserum. Successful treatment of the milder case included the use of this antiserum. The identity of "infectious paraplegia" of horses in Spain has been the subject of controversy and these findings support the idea that it is equine botulism.—H. E. Harbour.

Bell, J. F., Sciple, G. W. & Hubert, A. A. (1955). **A microenvironment concept of the epizoology of avian botulism.**—*J. Wildlife Mgmt.* **19,** 352-357. [Abst. from authors' summary.] **1177**

C. botulinum type C will germinate, reproduce and synthesize its toxin in small, discrete particulate substances such as invertebrate carcasses. The particulate substances contain the essentials for metabolism of the bacteria, and in that respect are independent of the ambient medium. The toxin ingested by waterfowl is probably in the bacteria which reside in the particulate substrates, rather than in the form of soluble, freely diffused toxin.

The carcasses of immature instars of two orders of insects supported growth and toxin production when suspended in distilled water freely exposed to atmospheric and dissolved oxygen. Therefore, the microenvironment hypothesis is a tenable one and justifies field work to determine whether microenvironments are important in the development of epidemics of botulism in ducks.

Fulthorpe, A. J. (1955). *Clostridium botulinum* **types A and B toxin-antitoxin reactions.**—*J. Hyg., Camb.* **53,** 180-195. **1178**

This paper deals with the complex situation arising in attempts to standardize toxins and antitoxins—and is of importance on account of the possible association of botulinus toxins with biological warfare. The *Cl. botulinum* A and B toxin/antitoxin reactions are examined in the light of investigations in other systems but the titrations were made by i/p injection of 20 albino mice (weighing 5 g.) and death/survival on the 4th day.

—Malcolm Woodbine.

Boyd, H. (1955). **Bovine genital vibriosis. A large field investigation, using the vaginal mucus agglutination test.**—*Thesis, Stockholm.* pp. 89. **1179**

Over 20,000 samples of vaginal mucus from more than 8,000 cattle in 105 dairy herds in Sweden, were examined by the vaginal mucus agglutination test for *Vibrio fetus,* a test which gave reliable results when a suitable antigen was employed. Smears from placenta from normal and abnormal calvings and bull semen were examined microscopically for *V. fetus.* Acute infection was observed in 9 herds, chronic active infection in 36 herds, and chronic latent infection (reactors to the agglutination test but no active cases of disease) in 18 herds. The remaining 42 herds were not infected. B. correlated the results of agglutination tests with the breeding records, and discussed control and prevention of the disease. He reviewed the literature (80 references).—R.M.

Dedié, K. & Voigt, A. (1955). Die Vibriosis genitalis des Rindes in Mitteldeutschland. **[Bovine *Vibrio fetus* infection in central Germany.]**—*Mh. VetMed.* **10,** 463-469. **1180**

In 1954 examination of foetuses, placentas and vaginal and preputial secretions revealed that *V. fetus* infection was present in 22 districts served by communal bulls and in 3 artificial insemination centres in the Leipzig region.—W. R. Bett.

Mundt, W. (1955). Der Nachweis von *Vibrio foetus* an verschiedenen Stellen des infizierten weiblichen und männlichen Genitalapparates des Rindes unter besonderer Berücksichtigung der histopathologischen Situationen des weiblichen Geschlechtstraktes. **[The recovery of *V. fetus* from various locations in the infected male and female genital system of cattle.]**—*Prakt. Tierarzt.* No. 10, 294 & 296-298. **1181**

The genital organs of a cow and a bull, selected from two different farms with a history of *V. fetus* infection, were examined bacteriologically and histologically, to determine the various sites of infection with *V. fetus.* In the cow, the organism was demonstrated in the vaginal vestibule, suburethral diverticulum, cervix, the right uterine horn and the fallopian tubes. In the bull, it was isolated from the prepuce, the penis, and the anterior portion of the urethra, 12 inches from the orifice. Histological examination of the female genital organs revealed desquamation of the

epithelium, vascular engorgement, proliferation of the endothelium and infiltration of the outer layers of the epithelium with leucocytes and lymphocytes.—F. K. Leeb.

Kawashima, H., Iwata, A. & Suzuki, Y. (1955). **Studies on vibriosis in cattle. I. Vibrionic abortion in cattle and enzootic infertility.**—*Exp. Rep. Govt exp. Sta. Anim. Hyg., Japan.* No. 29, pp. 211-225. [In English. Japanese summary: pp. 209-210.] **1182**

A detailed review (supported by tabulated results of laboratory examinations) of abortion and infertility among cattle in Japan during the period 1936–53. *V. fetus* was isolated from 143 out of 561 aborted foetuses examined during this period, it was also found to be the cause of a serious outbreak of abortion and infertility among cattle during August 1952–April 1953. Bulls played a major role in the spread of infection.—T.E.G.R.

Iwata, A., Kawashima, H. & Suzuki, Y. (1955). **[Studies on vibriosis in cattle. III. Experimental studies on the laboratory animals.]**—*Exp. Rep. Govt exp. Sta. Anim. Hyg., Japan.* No. 29, pp. 237-259. [In Japanese. Abst. from English summary.] **1183**

Laboratory animals of both sexes including pregnant and non-pregnant females were inoculated with *V. fetus* s/c, i/p, i/v and, in the case of males, by the intratesticular route. The organism survived for a long time in the testicles. Non-pregnant animals suffered no ill-effects. Abortion occurred in pregnant animals according to the route of administration in the following order :— i/v (80%), i/p (50%) and s/c (30%). It was considered likely that the stage of pregnancy at the time of inoculation influenced the abortion rate. The organism was recovered from the uterus and uterine discharges and from the foetus. —T.E.G.R.

Bu, I., Garm, O., Lindqvist, K. & Skjerven, O. (1955). Podningsforsøk på sau med bovine *Vibrio fetus*-stammer. **[Experimental transmission of bovine strains of *V. fetus* to ewes.]**—*Nord. VetMed.* **7**, 948-952. [In Norwegian. English and German summaries.] **1184**

Attempts were made to infect 7 virgin ewes with *V. fetus* through service by two artificially infected rams in all cases and by additional intravaginal administration of cultures in 2 cases. There was no sign that any of the ewes became infected. No serological examinations were made.—Hugh Boyd.

Thibault, P., Gaillard, J., Second, L. & Chatelain, R. (1955). Infections humaines à *Vibrio foetus*. **[Human infection with *V. fetus*.]**—*Bull. Acad. nat. Méd.* **139**, 95-99. **1185**

V. fetus was isolated from the blood of four men and one woman with various symptoms of systemic illness. Treatment with chloramphenicol was successful. There was no history of direct contact with farm animals. The authors discussed ten other cases previously described in the literature.—R.M.

Dubos, R. J., Smith, J. M. & Schaedler, R. W. (1955). **Metabolic disturbances and infection.** — *Proc. R. Soc. Med.* **48**, 911-914. [Authors' conclusions modified.] **1186**

The susceptibility of mice to experimental bacterial infections can be consistently increased by a variety of infection-enhancing procedures, which express themselves in higher morbidity and mortality, shorter survival time, larger bacterial populations in the various organs (particularly the liver), and increased susceptibility to endotoxins of Gram-negative bacilli and tubercle bacilli. The infection-enhancing effect of fasting appears within 36 hours. It is rapidly corrected by feeding a complete natural diet *ad libitum*, but aggravated by glucose or an incomplete diet. It could not be corrected by feeding a diet containing sugar, fat, minerals, all known vitamins and all essential amino-acids for 5 days before challenge with living bacteria or toxin. These findings are discussed with reference to their biological mechanisms and to their bearing on various epidemiological and pathological problems.

Nungester, W. J., Moore, V., Mika, L. & Summers, P. W. (1955). **Comparative study of host resistance of guinea pigs and rats. I. Virulence of *Diplococcus pneumoniae* and *Bacillus anthracis* for guinea pigs and rats.**—*J. infect. Dis.* **96**, 227-231. **1187**

Virulence was assessed by lethal effect for the host and the rate of clearance of pneumococci from the bloodstream and organs. In the lethal action the g. pig is about 10^6 as resistant to intraperitoneal injection of *Streptococcus pneumoniae* type I as is the white rat in contrast to that of *B. anthracis* in which 1,000 times the number of organisms are needed to

kill the rat. The rate of clearance of *Str. pneumoniae* was studied by intracardial injection of $3{\cdot}7 \times 10^7$ organisms into groups of g. pigs, which were killed at intervals and counts made on the spleen, kidney, brain and blood. There was a general increase in all organs and blood of the rat until death at 24 to 36 hours, but the g. pig tended to keep the number of the organisms down. Clearance from lung was assessed by an aerosol technique (4 to 5,000 organisms) and, in the g. pig, the number fell to 300 in 24 hours while there was a decrease in the rat in 6 hours followed by a marked rise and then a fall over several days. This is the first paper of a series dealing with diverse aspects of the general theme of species resistance.—MALCOLM WOODBINE.

LEVINE, L., STONE, J. L. & WYMAN, L. (1955). **Factors affecting the efficiency of the aluminum adjuvant in diphtheria and tetanus toxoids.**—*J. Immunol.* **75,** 301-307. [Authors' summary modified.] **1188**

The 4 most commonly used physico-chemical states of the aluminium precipitate were compared for efficiency as adjuvants for diphtheria and tetanus toxoids, namely: $AlPO_4$ preformed and added to toxoid, or precipitated in the presence of the toxoid; and $Al(OH)_3$ similarly prepared. Tetanus toxoid adsorbed on a preformed precipitate was only about 60% as potent as when a nascent precipitate was formed *in situ*. Similarly tested, $AlPO_4$ as adjuvant for tetanus toxoid was only about 60% as potent as $Al(OH)_3$.

The findings with regard to tetanus toxoid were consistent in both mice and g. pigs. In the case of both diphtheria and tetanus toxoids, the circulating serum antitoxin levels of immunized g. pigs were highly correlated with their survival times after challenge with the corresponding toxin.

VAN ULSEN, F. W. (1955). Schimmelabortus bij runderen. **[Abortion in cows caused by fungi.]**—*Tijdschr. Diergeneesk.* **80,** 1081-1088. [English, French and German summaries. Abst. from English summary.] **1189**

Twenty-five of 2,000 aborted bovine foetuses appeared to be infected with fungi. Most were from *Brucella*-free herds and were more prevalent after the wet summer of 1954. Nearly half the cases occurred after the feeding of mouldy hay. Skin lesions were seen in only 4 cases and no illness in the dam was noted. The fungi isolated were *Aspergillus fumigatus* (18), *Absidia ramosa* (5), *Mortierella polycephala* (1), *Mucor* sp. (1).
—P. K. C. AUSTWICK.

MORQUER, R., PUGET, E. & BAZEX, A. (1954). Blastomycose du chien (*Candida pseudotumoralis*). Anatomie et étiologie. **[Blastomycosis in a dog** (*Candida pseudotumoralis*).**]** —*Rev. Méd. vét.* **105,** 783-801. **1190**

The authors provide a clinical, pathological and cultural study of a case of "blastomycosis" in a dog, commencing as small interdigital nodules and becoming progressively disseminated through the lymphatic system. Small nodules 1–2 mm. diam. between skin folds and later larger pseudo-tumours (up to 20 mm. long) were present.

After 11 months the animal was cachectic and was destroyed. The nodules contained numerous budding yeast cells and chlamydospores. Isolation gave a pure growth of an apparently new species of yeast, *C. pseudotumoralis*. Details of its biological properties are given.—P. K. C. AUSTWICK.

DROUHET, E. (1955). Action de la nystatine (fungicidine) *in vitro* et *in vivo* sur *Candida albicans* et autres champignons levuriformes. **[The action of nystatin (fungicidin) on** *C. albicans in vitro* **and** *in vivo* **and on other fungi.]** — *Ann. Inst. Pasteur.* **88,** 298-314. **1191**

In vitro, fungicidin completely inhibited *C. albicans* and *C. pseudotropicalis* at a conc. of 3·12 μg./ml. and a *Geotrichum* sp. at 6·25 μg./ml. Fungicidal action was shown at 100 μg./ml. for 24 hours against *C. albicans*. No toxicity to rabbits was demonstrated in doses of up to 6 g. orally or 25 mg. intravenously per kg. body wt. In experimental infections by the intravenous and digestive routes there was, respectively, a marked reduction in mortality and in the amount of *C. albicans* recovered from faeces in treated groups. Of 35 cases of human moniliasis successfully treated with doses of from 200 mg. to 1 g. per day for 5 days, only 3 relapsed. No toxic effects were noted.—P. K. C. AUSTWICK.

HILSONT, P. & VERGE, J. (1954). Recherches sur le diagnostic allergique de la lymphangite épizootique du cheval par l'histoplasmine. **[Diagnosis of epizootic lymphangitis of horses by an intradermo-palpebral test using histoplasmin.]**—*Ann. Inst. Pasteur.* **87,** 737-738. **1192**

Histoplasmin tests on a number of healthy horses and mules proved negative. Six

horses and a mule naturally infected with *Histoplasma farciminosum* were similarly tested and after 24 hours several animals showed a slight reaction which rapidly disappeared. The method was not considered to be of value for diagnosis.

—P. K. C. Austwick.

Ryabova, G. S. (1955). **[Complete eradication of ringworm in farm animals.]**—*Veterinariya, Moscow.* **32,** No. 10, pp. 47-50. [In Russian.] **1193**

This paper is obviously based on much practical experience and goes thoroughly into every detail of treatment and, particularly, disinfection. R. is emphatic concerning the long survival time of the spores in dung, and recommends that the dung from premises containing affected animals be piled up at 200–300 m. distance from the animal sheds, and left to ferment. After this is complete it may be used as manure.—A. Mayr-Harting.

Nazarov, G. S. (1954). **[Dry-method treatment of ringworm in cattle.]**—*Rep. Ist Soviet Conf. vet. Derm.* Moscow, 1954. pp. 230-231. [In Russian.] **1194**

Ringworm in cattle was treated by rubbing powdered sulphur into the lesions and by dusting it over the rest of the body. This was repeated after 3 days; thereafter only the visible lesions were treated. An alternative powder for the initial dressing contained 3 parts sulphur to one part of copper sulphate. At the same time the byres were disinfected with a mixture of 10 parts 4% solution of formaldehyde, 5 parts creolin and 10 parts kerosene in 80 parts of water. Precautions were taken to protect personnel from infection.

—F. A. Abbey.

Ryabova, G. S. (1954). **[Disinfection in ringworm.]**—*Rep. Ist Soviet Conf. vet. Disinfect.* Moscow, 1951. pp. 101-108. [In Russian.] **1195**

R. found that ringworm spores survived in the external environment for up to 8 months. Of various preparations tested, the only one which killed spores was an emulsion containing 10% formaldehyde soln., 10% kerosene and 0·5% "SK–9" [chlorinated turpentine oil]. Conditions for its satisfactory use in disinfecting buildings and equipment were as follows:— air temp. above freezing point; temp. of emulsion over 40°C. at the moment of contact; 1 litre to be sprayed over 1 sq. metre. Buildings were cleared of animals and kept shut for 5 hours after spraying; they were then aired and the mangers were washed out with warm water. Harness and other equipment was dipped in the emulsion for 30 min. at 50°C. and then dried. The main disadvantage of this preparation was its relatively high cost.—F. A. Abbey.

Negroni, P. & Daglio, C. A. N. (1954). Alopecia parvimaculata espontanea del cobayo. **[Alopecia in ringworm of g. pigs.]**—*Rev. Inst. bact., B. Aires.* **16,** 129-132. [English summary.] **1196**

Of 8 g. pigs infected experimentally with *Trichophyton mentagrophytes* and treated for varying periods with fungosin (an antibiotic prepared from spore-forming bacilli and having fungistatic properties *in vitro*), 3 developed alopecia parvimaculata—small discrete spots of alopecia with ill-defined borders and no evidence of inflammation nor of the presence of parasites. These spots developed on the 8th day after infection and were similar to those seen occasionally in children affected with ringworm. In a similar experiment with *Microsporum gypseum,* the alopecia did not develop.—I. W. Jennings.

La Touche, C. J. (1955). **The importance of the animal reservoir of infection in the epidemiology of animal-type ringworm in man.**—*Vet. Rec.* **67,** 666-669. **1197**

Cattle ringworm is widespread in Great Britain and many cases of human infection occur which may require prolonged treatment and involve serious personal economic loss. The cat and dog ringworm fungus, *Microsporum canis,* is responsible for a high proportion of human cases in certain areas. Reduction of animal-type infections in human beings depends on control of the animal reservoir. In dogs the infection is usually visible and can be dealt with promptly, but cats may carry the disease unobserved and pass infection to children. Thus medical practitioners diagnosing human infections are in a good position to report suspected cases in household pets. The author considers that the control of the animal reservoir is the responsibility of the veterinary profession.—P. K. C. Austwick.

Mortimer, P. H. (1955). **Man, animals and ringworm.**—*Vet. Rec.* **67,** 670-672. **1198**

M. discussed the occurrence and characteristics of ringworm in animals and the factors thought to favour the spread of infection amongst them and to man. He mentioned results of therapy by various agents and observations on the apparent control of the disease

in calves by hygienic measures in cowsheds directed at eliminating dermatophytes thought to be persisting on the inside woodwork etc. Adequate control of the animal reservoir of ringworm depends on co-operation between medical practitioners, veterinarians and public health officials.—P. K. C. Austwick.

Nisbet, D. I. & Bannatyne, C. C. (1955). **A dermatitis of sheep associated with an organism of the genus *Actinomyces*. — *Vet. Rec.* 67, 713-715.** **1199**

Skin lesions generally confined to the hairy parts of the head and scrotum were observed during the winters of 1953–55 on Blackface ewes and tups in Argyll. Granulating sores preceded extensive scab formation around tufts of hair, but by May renewed growth of hair had occurred. Material from these sheep was successfully used in experimental inoculations and an organism resembling *Actinomyces dermatonomus* was isolated from both the original and experimental lesions.—P. K. C. Austwick.

Emdin, R. (1954). Micosi generalizzata in suino. **[Generalized infection with a fungus of the genus *Nocardia* in a pig.]—*Ann. Fac. Med. vet. Pisa.* 7, pp. 59-68.** [English and French summaries.] **1200**

The lesions, similar to those of TB., took the form of granulomas in the lungs, kidneys, liver and spleen.—I. W. Jennings.

Erikson, D. & Porteous, J. W. (1955). **Commensalism in pathogenic anaerobic *Actinomyces* cultures.—*J. gen. Microbiol.* 13, 261-272.** [Authors' summary modified.] **1201**

A 'rough' typical strain of *Actinomyces israeli* of human origin became a 'smooth' soft form more tolerant of oxygen after the physical trapping, within the mycelium, of a few alien and facultatively anaerobic cells. Such cells, usually staphylococci, were isolated in single cell culture by micromanipulative techniques and then grown aerobically. They affected the morphology and oxygen tension requirements of the host organism. In successfully balanced mixtures the colonies appeared homogenous anaerobically and failed to grow aerobically. The commensal organism was most readily detected in a water/gel system in stoppered bottle cultures. Similar associations were obtained from a variety of morbid material, especially that of bovine origin. It is suggested that reports of a smooth soft micro-aerophilic organism little given to branching may cover: (1) *A. israeli* and associates; or (2) a distinct organism described earlier as *A. bovis*.

Bergman, S. (1955). ***In vitro* studies on antimycotics. A comparison between different methods. — *Acta path. microbiol. scand.* Suppl. 104, pp. 130.** [In English.] **1202**

B. reviewed the literature on the testing of fungistatic and fungicidal compounds, pointing out the inconsistencies of previous attempts to standardize techniques. In the work described 30 substances were tested against 14 strains of dermatophytes belonging to 7 different species. Seven different methods were used and the optimum conditions for carrying out tests are specified. None of the substances investigated was regarded as an ideal antimycotic, but much valuable information on their activity under standard conditions is given.—P. K. C. Austwick.

Freundt, E. A. (1955). **The classification of the pleuropneumonia group of organisms (Borrelomycetales). — *Int. Bull. bact. Nom. Taxon.* 5, 67-78.** **1203**

The nutritional requirements, individual and colonial morphology, size and staining properties of the group are described and its classification and nomenclature are discussed. No agreement has been reached on this latter point though various suggestions have been put forward. A tentative list of species is proposed in the Order Mycoplasmatales ordo nov., genus *Mycoplasma* Nowak, 1929. This comprises 14 species of which two new ones—*M. bovigenitalium* sp. nov., and *M. gallinarum* sp. nov.—are described.—T.E.G.R.

Manjrekar, S. L. (1955). **Observations on the curative treatment of contagious caprine pleuro pneumonia.—*Indian vet. J.* 31, 417-423.** **1204**

All of 5 affected goats treated with chloramphenicol, as well as 5 treated with terramycin, recovered from the disease, as compared with 19 out of 213 goats treated in different stages with neoarsphenamine, sulphasolucin, penicillin or aureomycin.—

—R. N. Mohan.

Hanko, E. & Otterlin, S.-E. (1955). Ett utbrott av PPLO-infektion hos getter och får i Sverige. **[An outbreak of infection with pleuropneumonia-like organisms in goats and sheep in Sweden.]—*Nord. VetMed.* 7, 609-624.** [In Swedish. English and Ger-

man summaries. Abst. from English summary.] **1205**

Of 41 goats and 3 sheep on a Norrland farm, 21 goats and one sheep became infected. Six goats died. Symptoms resembled those of pleuro-pneumonia and mastitis. The disease was controlled by slaughter of the remaining animals. No cases occurred on neighbouring farms, and the disease has not previously or since been seen in Sweden. There was no definite information as to the source of infection.—M.G.G.

YAMAMOTO, R., ADLER, H. E. & CORDY, D. R. (1955). **The propagation of a virulent goat pleuropneumonia-like organism in the chick embryo.**—*J. Bact.* **69,** 472-476. **1206**

A pleuropneumonia - like organism was isolated from a highly fatal disease of goats, characterized by fever and swelling of the leg joints, described by Cordy *et al.* [*V.B.* **25,** 1622]. When inoculated into the chorioallantois, the allantoic cavity or the yolk sac of chick embryos it caused mortality rates comparable to those observed by other authors working with P.P.L.O. The growth of the organism in tissue culture was similar to that in infected embryos.—A. ACKROYD.

DOMERMUTH, C. H. & JOHNSON, E. P. (1955). **A preliminary report on a freeze-agglutination test for chronic respiratory disease.**—*Proc. 27th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.*, Durham, New Hampshire, June 14-15, 1955. pp. 3. **1207**

Details of the test are given. It requires less time and materials than the haemagglutination-inhibition test; it is not too sensitive and gives an approximate indication of titre. —D. LUKE.

OLESIUK, O. M. & VAN ROEKEL, H. (1955). **Response of artificially inoculated chronic respiratory disease chickens to various drugs.**—*Proc. 27th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.*, Durham, New Hampshire, June 14-15, 1955. pp. 3. **1208**

Carbomycin and terramycin (oxytetracycline) given in multiple doses over 10 days after inoculation with the agent of chronic respiratory disease reduced the severity of the attack.—D. LUKE.

JUNGHERR, E. L. (1955). **Pleuropneumonia-like organisms in poultry.**—*Arch. exp. Vet-Med.* **9,** 212-217. [In English.] **1209**

Pleuropneumonia - like organisms are recognized as primary aetiological agents of a number of respiratory conditions in poultry and also as possible cause of some forms of arthritis and synovitis. J. discussed methods of diagnosis.—W. G. SILLER.

See also abstr. **1322** (transmission of bacteria by Nippostrongylus brasiliensis); **1375** (bovine malignant catarrh and listerellosis); **1376** (report, infectious diseases of cattle in the U.S.A.); **1472** (report, Australia); **1473** (report, Southern Rhodesia); **1474** (book, dictionary of fungi).

DISEASES CAUSED BY PROTOZOAN PARASITES

THIENPONT, D. & HERIN, V. (1955). Le traitement de la trypanosomiase bovine à *Trypanosome vivax* par le bromure d'éthidium. Le contrôle en brousse à Astrida (Ruanda-Urundi). **[Treatment of bovine trypanosomiasis with ethidium bromide.]**—*Ann. Soc. belge. Méd. trop.* **35,** 439-450. [Flemish summary.] **1210**

Ethidium bromide was used in doses of 1 mg./kg. and 2 mg./kg. body wt. in two groups of cattle infected with *T. vivax*. Mild local reactions were observed in 20% of animals but photosensitization was not observed. Relapses occurred after 4–7 months in 20% of animals.—E. J. L. SOULSBY.

GONZALEZ ROMERO, V. (1955). Focos enzooticos de leishmaniosis canina en Madrid. **[Canine leishmaniasis in Madrid.]**—*Bol. Cons. Col. vet. Esp. Suppl. cient.* **9,** 373-385. **1211**

The author records the occurrence of leishmaniasis in about 5% of the canine population. There is a seasonal incidence, with peaks in October/November and March/April. Infected animals constitute a danger to children and it is recommended that the disease be controlled by (a) early diagnosis (b) slaughter of cases which are too far gone for treatment and (c) treatment of suitable cases with antimony compounds.—I. W. JENNINGS.

I. ABSHAGEN, H. (1955). Vergleichende Untersuchungen in der Trichomonadendiagnostik bei Bullen. **[Diagnosis of trichomoniasis in bulls.]**—*Mh. VetMed.* **10,** 215-218. **1212**

II. SCHUCKMANN, B. (1955). Vergleichende Untersuchungen in der Trichomonadendiagnostik bei Bullen. **[Diagnosis of trichomoniasis in bulls.]**—*Ibid.* 218-220. **1213**

I. Direct and cultural examination of material collected from 62 bulls (a) by a suction method, using a special catheter and (b) by preputial washings, indicated that the

efficiency of method (a) was 43·5%, while that of (b) was 100%.

II. Similar studies, using a broth serum antibiotic medium as well as saline for the preputial washing method, showed a 100% efficiency using saline, and 74% using broth, but only 65% of positive cases were detected by the suction method.—M. L. CLARKE.

BEAMES, R. M. (1955). **The serological examination of a strain of *Trichomonas foetus* isolated in Queensland.**—*Qd J. agric. Sci.* **12,** 15-19. [Author's summary slightly modified.] **1214**

A strain of *Tr. foetus* isolated in southern Queensland was compared with the two known serological types, Belfast and Manley by the agglutination test, and was found to be serologically similar to the Belfast type.

KUPROWSKI, M. (1955). Badania histopatologiczne nad zakaźnym zapaleniem jelit ślepych i wątroby indyków (*typhlohepatitis infectiosa*). **[Histopathology of blackhead in turkeys.]**—*Roczn. Nauk rol.* Ser. E. **67,** 69-103. [In Polish. English and Russian summaries.] **1215**

K. examined 11 turkeys and a hen which died from entero-hepatitis. He regards the hepatic lesions as anaemic infarcts. Around the necrotic foci giant cells were seen and it is suggested that these may have been mistaken for "encysted protozoa". In all these cases, structures morphologically similar to *Candida albicans* were seen in the lumina of blood vessels. *C. albicans* was isolated from livers on 2 occasions. K. considers *C. albicans* to be the causative agent of the condition and in his review of literature pointed out that Wetzel & Enigk in Germany had put forward a similar hypothesis as far back as 1938.—M. GITTER.

DAVIES, S. F. M. & KENDALL, S. B. (1955). **An experimental assessment of the value of nitrofurazone used continuously as a coccidiostatic drug.**—*Vet. Rec.* **67,** 867-870. [Authors' summary modified.] **1216**

Nitrofurazone, given to chicks at concentrations in the food of 0·01% or 0·0196% proved markedly less effective than sodium sulphadimidine (given as 0·2% of the drinking water) in reducing mortality from caecal coccidiosis. Treatment with a conc. of 0·01% for as long as 17 days before heavy infection failed to provide full protection. There was evidence, morever, that it interfered with the development of the resistance which ordinarily protects untreated birds against infection.

LAWRENCE, D. A. & SHONE, D. K. (1955). **Porcine piroplasmosis. *Babesia trautmanni* infection in Southern Rhodesia.**—*J. S. Afr. vet. med. Ass.* **26,** 89-93. **1217**

A historical review of porcine piroplasmosis with notes on its occurrence in S. Rhodesia. In a local outbreak high fever, anaemia, haemoglobinuria and abortion were seen. S/c inj. of phenamidine at the rate of 1·5 ml. of a 40% soln. per 100 lb. body wt. gave spectacular curative responses.

—D. POYNTER.

I. FUSSGÄNGER, R. (1955). Berenil in der Veterinärmedizin. **["Berenil", a salt of di(4-aminodiphenyl)-triazene, in veterinary medicine.]** — *Vet.-med. Nachr.* No. 3. pp. 146-151. [Summaries in Suppl. No. 3/1955. English summary pp. 3-4; French summary pp. 10-11; Spanish summary pp. 16-17.] **1218**

II. BAUER, F. (1955). Ergebnisse der klinischen Prüfung von Berenil. **[Results of clinical trials with "berenil".]**—*Ibid.* pp. 152-154. [Summaries in Suppl. No. 3/1955. English summary p.4; French summary p. 11; Spanish summary p. 17.] **1219**

I. F. described briefly the development of "berenil" from a series of quinaldine compounds. He tabulated results with the dilactate when tested parenterally for toxicity in the mouse, rabbit and dog, and, from activity tests against many protozoa, those concerning its minimum active doses against trypanosomes and piroplasms, where it proved highly active, particularly against the latter in dogs. In that species, the drug thus showed a therapeutic ratio of 60–150 against *Babesia canis* and of 6–15 against *T. congolense* infection, being more effective than acaprin and well tolerated by the i/m route. Infected blood can be sterilized of piroplasms by adding the drug in a proportion of 1 : 5,000.—It has not been possible to cause trypanosomes to become resistant to "berenil". The paper also provides a table showing 8 examples of the antibacterial activity of the drug.

II. A summary of the results of clinical trials of "berenil" against animal trypanosomiases and piroplasmoses caused by a wide variety of strains and in different parts of the world and particularly of Africa. These include radical cures of *B. bovis* infection in cattle with single doses of up to 3 mg./kg. i/m, where 0·75 mg./kg. provided clin. cure. The development of immunity in cattle and dogs to infecting piroplasms was not prevented by doses as high as 10 mg./kg.

In some 800 cattle an i/m dose of 2–3 mg./kg. always provided a sterilizing cure in trypanosomiasis, 1 mg./ kg. being sufficient for *T. congolense.*

The drug was also said to be effective against infections with *T. brucei* and *T. evansi,* although only a few cases had been treated with it to date.

Against infections with *B. canis, B. ovis* and *B. bovis* single doses of up to 3 mg./kg. proved curative, but apparently did not provide a lasting prophylactic effect.

"Berenil" proved inactive against infections with *Theileria mutans* and *Th. parva.*

Used as a 5–7% soln. i/m, the drug was well tolerated by over 1,000 animals, local swellings at the site of injection being slight and rare. Unlike acaprin, it did not cause side-effects due to parasympathetic stimulation.

—G. P. MARSHALL.

SPLITTER, E. J., TWIEHAUS, M. J. & CASTRO, E. R. (1955). **Anaplasmosis in sheep in the United States.**—*J. Amer. vet. med. Ass.* **127,** 244-245. **1220**

Blood from sheep affected with an obscure debilitating condition was inoculated experimentally into lambs. An organism resembling *Anaplasma marginale* appeared in the blood of these lambs. *A. marginale* is not known to occur naturally in sheep. The authors believe that the organism may be *A. ovis.* which had not hitherto been recorded in the Western Hemisphere.—C. C. BANNATYNE.

EYLES, D. E. & COLEMAN, N. (1955). **The effect of sulfadimetine, sulfisoxazole, and sulfapyrazine against mouse toxoplasmosis.**—*Antibiot. & Chemother.* **5,** 525-528. [Spanish summary p. 601.] [Authors' summary modified.] **1221**

Sulfadimetine and sulphafurazole were ineffective against mouse toxoplasmosis except at very high dosages. Even when the drugs were administered at the rate of 2,000 mg.% in the diet (approx. 4 g./kg./day), half or less of the mice were cured. On the other hand, the median effective dose of sulphapyrazine was less than 31 mg.%, showing this drug to be superior to sulphadiazine on a g. for g. basis. This compound is the most active of the sulphonamides tested.

See also abstr. **1473** (report, Southern Rhodesia); **1477** (parasitism).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

PRIMAULT, B. (1955). De l'influence des variations de la pression atmosphérique sur l'apparition de la fièvre aphteuse. **[Influence of changes in atmospheric pressure on the incidence of foot and mouth disease.]**—*Schweiz. Arch. Tierheilk.* **97,** 412-422. [In French. English, German and Italian summaries.] **1222**

The authors studied the relationship between atmospheric pressure and the onset of F. & M. disease in 245 outbreaks. In 215 of these, the barometer was low between 36 and 48 hours before the appearance of symptoms. The remaining 30 cases all occurred in one year (1939) in the Canton of Zürich and it is suggested that these animals became infected as a result of overwhelming infection. Another feature of note in the pressure records was the constancy of high pressure about 108 hours before the onset of symptoms. The significance of this was not clear.

—I. W. JENNINGS.

PAARMANN, E. (1955). Klinik und Pathologie der Spätschäden der Maul- und Klauenseuche. **[Symptoms and pathology of late sequelae to foot and mouth disease.]**—*Zbl. VetMed.* **2,** 430-450. [English, French and Spanish summaries.] **1223**

P. discussed the value of electrocardiography in the diagnosis and prognosis of late sequelae of F. & M. disease. Following recovery, inflammatory foci may persist for a time in various organs, particularly the heart. Such foci may be demonstrated histologically even years after infection. The causes underlying these new changes are unknown. Results were given of histological findings in heart, lung, spleen, thyroid gland, adrenal gland, kidney, liver, c.n.s., udder and skeletal muscle material from 344 cattle slaughtered at various stages of the disease, convalescence and after recovery.—E.G.

WIGMORE, J. O. & HENDERSON, W. M. (1955). **Control of yeast contamination by "Mycostatin" in cultures of the virus of foot-and-mouth disease.** — *Nature, Lond.* **176,** 516. **1224**

In culturing F. & M. disease virus using ox tongue epithelial tissue, the addition of mycostatin, an antifungal substance from a

soil actinomycete, in concentrations of 20–80 units/ml. completely inhibited the growth of all yeast contaminants without decreasing multiplication of the virus.—A. ACKROYD.

GILLESPIE, J. H. & FRENKEL, H. S. (1955). **Research on foot-and-mouth disease. VIII. Titration of foot-and-mouth disease virus making use of surviving tongue epithelium from vaccinated cattle.**—*Amer. J. vet. Res.* **16,** 505-510. [Authors' summary modified.] **1225**

Surviving epithelium from tongues of cattle that were vaccinated against F. & M. disease and from others that had recovered from the infection was used successfully in the tissue-culture titration method described by Brooksby & Wardle [*V.B.* **24,** 2699]. In comparative titrations in cattle and in tissue culture with four tissue-culture strains, two chick-propagated strains, and one egg-propagated strain, good correlation was observed. With one tissue-culture strain, modified Baker's solution instead of glucose solution was used to obtain satisfactory results. Epithelium collected by the clamp method or Berkel machine method can be used in tissue culture. Virus-neutralizing antibodies produced in chickens and in cattle after infection could be detected by the tissue-culture titration method.

SCHNEIDER, B. (1955). Zur Infektiosität der Maul- und Klauenseuche Adsorbatvakzine. **[Pathogenicity of foot and mouth disease adsorbate vaccine.]** — *Mh. Tierheilk.* **7,** 81-87. **1226**

Four vaccines were prepared from O_2, A and C laboratory strains and an O_2 field strain by the method of Waldmann & Köbe. Although all four were shown to be avirulent for cattle, s/c injection of types O_2 and A produced characteristic symptoms and deaths in baby mice.—M.G.G.

SCHNEIDER, B. (1955). Zur Übertragung der Maul- und Klauenseuche-Antikörper vom Muttertier auf das neugeborene Kalb. **[Transmission of foot and mouth disease antibodies from the dam to the new-born calf.]**—*Mh. Tierheilk.* **7,** 137-143. **1227**

F. & M. disease antibodies and γ-globulin were absent from the blood serum of a newborn calf whose dam was highly immunized against the disease. They first appeared in the serum 7 hours after the calf had taken its first colostrum, and persisted for about 8 weeks.—R.M.

BURNS, K. F. & FARINACCI, C. J. (1955). **Rabies in nonsanguivorous bats of Texas.**—*J. infect. Dis.* **97,** 211-218. [Authors' summary modified.] **1228**

The isolation of virus from 2 bats in the course of a survey of 72 Mexican free-tailed bats *(Tadarida mexicana)* is reported. Antibody was detected by neutralization tests in mice in a high percentage of sera from apparently healthy bats. It is considered possible that *T. mexicana* may act as a reservoir for rabies virus.

I. KOPROWSKI, H. (1955). **Rabies in cattle. II. Review of immunization of herbivorous animals against rabies.**—*J. Amer. vet. med. Ass.* **127,** 359-360. **1229**

II. GOMEZ, C., BLACK, J. & KOPROWSKI, H. (1955). **Rabies in cattle. III. Comparative studies on vaccination of cattle in Colombia with Flury virus and chloroform-inactivated vaccine.**—*Ibid.* 360-363. **1230**

III. KOPROWSKI, H., BLACK, J. & JOHNSON, W. P. (1955). **Rabies in cattle. IV. Vaccination of cattle with high egg-passage, chicken embryo-adapted rabies virus.**—*Ibid.* 363-366. **1231**

IV. CARNEIRO, V., BLACK, J. & KOPROWSKI, H. (1955). **Rabies in cattle. V. Immunization of cattle in Brazil against exposure to street virus of vampire bat origin.**—*Ibid.* 366-369. [For part I, see *V.B.* **23,** 1890.] **1232**

I. Immunization has assumed importance because of the possibility of infection of cattle by rabid bats which have spread to the North American Continent from the South.

II. Experimental studies in the field showed that good protection was given by the Flury strain of living virus and by a 30-ml. dose of chloroform-inactivated vaccine.

III. Detailed information is given with regard to the satisfactory immunity produced by high egg-passage virus in Florida and Georgia and its resistance to challenge with street virus.

IV. With a sufficiently large dose of Flury strain virus cattle may be immunized against street virus and the South American strain of vampire bat origin.

—W. S. MARSHALL.

COX, H. R. & BURKHART, R. L. (1955). **The use of avianized rabies vaccine.**—*Proc. 58th Ann. Meet. U.S. live Stk sanit. Ass.*, Omaha, 1954. pp. 350-356. **1233**

In Israel, Southern Rhodesia, and Malaya over 2 million dogs have been inoculated with

the Flury chick embryo vaccine. Development of the disease following vaccination has occurred in 63 dogs, but in 40 of these it occurred within a few weeks of vaccination. A marked reduction in the number of cases has resulted in Israel and Southern Rhodesia, whilst the disease has apparently been eradicated in Malaya.—A. ACKROYD.

VETERE, L. (1954). Un caso di rabbia ricorrente in un coniglio inoculato con virus Flury. **[Recurrent form of rabies in a rabbit experimentally infected with Flury virus.]**—*Zooprofilassi.* **9,** 241-242. **1234**

A rabbit inoculated s/c with the Flury strain of rabies virus had a recurrence, after 3 months, of the epileptiform crises which followed the inoculation. G. pigs inoculated with brain material from this rabbit died after 24 hours from typical paralytic rabies, proven by further g. pig inoculation. Of 5 rabbits inoculated with the rabbit brain, 4 reacted as follows :— transitory epileptiform crises with recovery; violent crises with death in 7 days; cachexia followed by death; typical paralytic rabies.—I. MARTINI.

REAGAN, R. L., CHANG, S. & BRUECKNER, A. L. (1955). **Studies by electron microscopy of a fixed (Pasteur) rabies virus, a street rabies virus and the egg adapted Flury strain of rabies.**—*Texas Rep. Biol. Med.* **13,** 356-361. [Abst. from authors' summary.] **1235**

Studies by the electron microscope of brains of mice infected with Strain R-174 Lederle street rabies virus, showed the virus to vary from 110 to 120 mμ. In comparison, the Pasteur N.I.H. Habel fixed-virus rabies strain measured 80 mμ, and the Flury egg adapted rabies strain 110 mμ. These bodies could not be demonstrated in concentrated normal mouse brain and normal chick embryo. Concentrated virus-bearing mouse street virus injected into normal mice intracerebrally (i/c) produced rabies as did the fixed virus and Flury strain. Concentrated normal mouse brain and normal chick embryo injected i/c into Swiss mice produced no evidence of rabies.

BIELING, R. (1955). Untersuchungen über virusbedingte Infektionen bei Ungeborenen. **[Virus infections of the embryo and foetus.]**—*Arch. exp. VetMed.* **9,** 157-166. **1236**

B. discussed maternal transfer of infections to the human foetus during the first half of pregnancy, leading to foetal damage or death, without causing substantial damage to the maternal organism. The embryo and foetus react to infective agents according to the stage of development at time of infection and quite differently from the adult organism. In the text there are photomicrographs of histological sections of infected human foetal lung and photographs of lesions in chick embryo chorioallantois following infection with vaccinia virus.—E.G.

ANDREWES, C. H., BANG, F. B. & BURNET, F. M. (1955). **A short description of the *Myxovirus* group (influenza and related viruses).**—*Virology.* **1,** 176-184. **1237**

The Virus Subcommittee of the International Microbiological Conference recommended the establishment of a group of viruses named *Myxovirus.* The names suggested were *Myxovirus influenzae* (influenza virus), *M. multiforme* (Newcastle disease virus), *M. pestis-galli* (fowl plague virus). Details are given of their morphology, physical and chemical properties, haemagglutination, antigenic characters, natural transmission, growth, habitat, pathogenicity and immunological properties.—M.G.G.

KAPLAN, W., WINN, J. F. & PALMER, D. F. (1955). **Susceptibility of the pigeon (*Columba livia*) to infection with Western equine encephalomyelitis virus. I. Blood virus levels following subcutaneous inoculation.**—*J. Immunol.* **75,** 225-226. [Authors' summary modified.] **1238**

S/c inoculation of pigeons with 160 chick LD_{50} or 1,600 chick LD_{50} of WEE virus produced early viraemias which persisted for at least 96 hours. Virus was recovered from 3 out of 15 pigeons inoculated with lesser amounts of virus, but in these cases viraemia was slower to appear and is considered to be due to contact infection through handling. WEE infection, also apparently through contact, occurred in one of the 5 pigeons which received no virus artificially.

DE BOER, C. J., CADILEK, A. E. & WALTERS, S. R. (1955). **The use of hyperimmune antiserum concentrates in experimental Western equine encephalomyelitis.**—*J. Immunol.* **75,** 308-314. [Authors' summary modified.] **1239**

Curves of virus multiplication after parenteral infection of hamsters with Western equine encephalomyelitis (WEE) are presented. Satisfactory WEE immune serum concentrate can be prepared by the sodium

sulphate precipitation and the alcohol fractionation methods.

Administration of immune serum concentrate as late as 2 days after i/p infection protected 32 out of 45 hamsters. Administration later than 2 days prolonged the average survival time but did not prevent the disease, and as late as 3 days after i/d infection had beneficial effects.

LEVASHOV, A. A. & ALASHKIN, A. Y. (1955). **[Provocation of occult equine infectious anaemia by the injection of atropine and adrenaline.]**—*Veterinariya, Moscow.* **32,** No. 7, pp. 50-53. [In Russian.] **1240**

A method described by Martinyuk, causing an exacerbation of equine infectious anaemia by injections of atropine, followed 8 hours later by adrenaline, was tested on naturally and experimentally infected horses. Those affected with the chronic form gave no reaction whatsoever. Those, that had had their first attack recently, had a febrile reaction but there was no change in the blood picture indicative of E.I.A. Horses with *Nuttallia* infection reacted in the same way. The method appears to be useless, and unnecessary as the disease can easily be diagnosed clinically.

—A. MAYR-HARTING.

ITIKAWA, O., ISHITANI, R., SHIBATA, D., OGURA, Y., TAKANAMI, M., HORIUCHI, T. & YONEMURA, T. (1955). **[A histopathological study of equine infectious anaemia with needle biopsy materials, especially a cytochemical and phase-microscopic observation.]**—*Exp. Rep. Govt exp. Sta. Anim. Hyg., Japan.* No. 29, pp. 131-137. [In Japanese.] pp. 138-172. [In English.] **1241**

Virulent blood was injected s/c into 4 healthy horses. Liver biopsy was carried out before and after injection. Temp. reactions, changes in the blood picture and in the chemical and morphological structures of the liver tissue were studied. The results of these examinations are reported in detail. The horses were killed at various stages of the experiment and the results of P.M. examination will form the subject of a separate paper.

—T.E.G.R.

MATTHIAS, D. & SCHMIDT, D. (1955). Über das Vorkommen von Innenkörpern (Heinz-Körpern) in den Erythrozyten bei Pferden mit ansteckender Blutarmut. **[Occurrence of Heinz bodies in the erythrocytes of horses with infectious anaemia.]**—*Arch. exp. Vet-Med.* **9,** 104-123. **1242**

The authors demonstrated Heinz bodies [spherical bodies located peripherally within r.b.c.] in blood smears from cases of acute equine infectious anaemia. They were thought to consist of haemoglobin precipitates and cellular stroma. They appeared either at the onset or shortly after the fever stage and the number increased until death. In chronic cases their incidence varied. Occasionally they were present in healthy horses. It is stated that erythrocytic inclusion anaemia was hitherto only known to occur in certain poisonings and the possible relationship between the formation of Heinz bodies and the form of anaemia characteristic for E.I.A. is discussed.—E.G.

DUKIĆ, R., ŠEBETIĆ, Č. & TVORIĆ, S. (1955). Influenza catarrhalis u jednoj jedinici beogradskog garnizona. **[Catarrhal influenza in army horses in Belgrade.]**—*Vet. Glasn.* **9,** 590-598. [In Croat. German summary.] **1243**

The authors discussed an outbreak of catarrhal influenza in Yugoslav army horses in 1955. The disease did not spread to all horses of the unit nor was it necessarily transmitted by close contact. Adverse climatic conditions appeared to reduce resistance. Blindness was a frequent after-effect.—E.G.

BAZULEV, P. M. (1953). **[Methods of rinderpest immunization.]**—*Trud. nauchno-kontrol. Inst. vet. Preparatov.* **4,** 146-155. [In Russian.] **1244**

Rinderpest still exists in the border regions of the U.S.S.R. south of the Caucasus, in the central Asia republics, and east of Lake Baikal (Siberia). B. stated that vaccines prepared from rinderpest virus adapted to the chick embryo, goat or rabbit were considered unsuitable for use under conditions prevailing in the U.S.S.R. An aluminium hydroxide tissue vaccine, injected s/c, gave good immunity and was superior to the tissue vaccine previously employed.—R.M.

STÉVENIN, G. (1955). Étude de la vaccination contre la peste bovine par le virus lapinisé. **[Study of anti-rinderpest vaccination with lapinized virus.]**—*Rev. Cps vét. Armée.* No. 2, pp. 66-88. **1245**

A general discussion on the preparation, titration and use of lapinized virus, and avianized lapinized virus. No new knowledge.

—I. W. JENNINGS.

TAKEMATSU, M. & MORIMOTO, T. (1955). **[Hematological studies of cattle infected with avianized virus of rinderpest.]**—*Exp. Rep.*

Govt exp. Sta. Anim. Hyg., Japan. No. 29, pp. 173-181. [In Japanese. Abst. from English summary.] **1246**

Cattle were inoculated with rinderpest virus after its 21st passage in chick embryos. There was a progressive decrease in the leucocyte count throughout the temp. reaction followed by a return to normal. A decrease was also observed in the eosinophile and basophile counts at the onset of fever; in the neutrophile field, there was a slight shift of nuclei to the left, accompanied by a striking increase in monocytes towards the end of the temp. reaction. These changes became less apparent as the number of passages increased. —T.E.G.R.

PALLASKE, G. (1955). Zur Stomatitis papulosa infectiosa bovum. **[Infectious bovine papular stomatitis.]**—*Zbl. VetMed.* **2,** 507-521. [English, French and Spanish summaries.] **1247**

P. described a benign form of infectious papular stomatitis in cattle in central Germany, which accompanied chronic gastro-enteritis and hyperkeratosis of undetermined cause [*V.B.* **25,** 4148]. The mucous membranes of gums, tongue, palate, lips and, occasionally, oesophagus and rumen were affected. In some instances the lesions superficially resembled those of fowl pox. Histologically they were those of typical papular exanthema. The disease could be transmitted experimentally and was thought to be caused by a virus. P. suggested that the virus may remain for some time latent in the tissues of apparently healthy cattle and the condition became clinical only when the host's resistance is lowered. Secondary bacterial infections of lesions may change the characteristic appearance. P. stressed the importance of differential diagnosis from atypical F. & M. disease and cow pox.—E.G.

MCKERCHER, D. G., MOULTON, J. E. & JASPER, D. E. (1955). **Virus and virus-like cattle disease entities new to California.**—*Proc. 58th Ann. Meet. live Stk sanit. Ass.*, Omaha, 1954. pp. 260-269. **1248**

Since 1953, outbreaks of an acute febrile condition characterized clinically by influenza-like symptoms have occurred in California predominantly in large herds in mature cattle. It appears to be highly contagious and causes a 5–10% mortality, although the majority of affected animals recover in 7–10 days with little loss of condition. Recurrence in recovered animals has not been reported. The causative agent has not been identified although pleuropneumonia-like organisms were isolated from 3 animals in the last outbreak. Experimental transmission has not been achieved and cross challenge experiments suggest that the condition is unrelated to virus diarrhoea.—A. ACKROYD.

MITSCHERLICH, E. (1955). Beiträge zum Virusabort des Schafes. I. Mitteilung: Die Ätiologie des Virusabortes des Schafes. **[Virus abortion in ewes. I. Aetiology.]** — *Vet.-med. Nachr.* No. 1. pp. 1-15. [Summaries in Suppl. No. 1/1955. English summary: pp. 3-4; French summary: pp. 13-15; Spanish summary: pp. 23-24.] **1249**

MITSCHERLICH, E. (1955). Beiträge zum Virusabort des Schafes. II. Mitteilung: Epidemiologie, Seuchenbild und Diagnose des Virusabortes der Schafe. **[Virus abortion of sheep. II. Epidemiology and diagnosis.]**—*Ibid.* No. 3. pp. 129-145. [Summaries in Suppl. No. 3/1955. English summary: pp. 2; French summary: pp. 9-10; Spanish summary: pp. 15-16.] **1250**

I. & II. A general account of the disease, with reference to its incidence in Germany. Investigation of abortion in 31 flocks revealed virus abortion in 14, *Salmonella abortus-ovis* in 10 and a mixed infection in one of them; the cause of abortion in the remainder was not determined.—R.M.

POLSON, A. & MADSEN, T. I. (1955). **A brain factor influencing the viability of neurotropic Rift Valley fever.**—*Nature, Lond.* **176,** 645-646. **1251**

A chloroform-insoluble factor rapidly inactivating the virus of Rift Valley fever is present in emulsions of 10% serum-saline extracts of virus-infected and normal mouse brain tissue. It can be separated from brain emulsions by dialysis and is probably not a protein.—A. ACKROYD.

MARTINS MENDES, A. & DE OLIVEIRA DÁSKALOS, A. (1955). Algumas tentativas para a leporização do vírus da peste suína em Angola. **[Adaptation to rabbits of the virus of swine fever in Angola.]**—*Rev. Ciene. vet.* **50,** 253-264. [English summray.] **1252**

The authors claim to have passed the swine fever virus from pigs to rabbits by i/v injection of citrated blood. [It is not clear whether the virus used was that of African swine fever or of the classical swine fever.—Ed. *V.B.*]—I. W. JENNINGS.

LULIĆ, V. (1955). O proizvodnji i primjeni lapinizirane vakcine svinjske kuge. **[Pre-**

paration and use of lapinized vaccine against swine fever.]—*Vet. Glasn.* **9**, 672-677. [In Croat. English summary.] **1253**

L. reported on production of swine fever vaccine by serial passage of freeze-dried, lapinized virus in rabbits. Of 154 pigs given 2 ml. i/m of the vaccine, 132 resisted challenge 10–16 days later. Immunity lasted at least 12 months. There was no transmission of virus from vaccinated to unvaccinated pigs, kept in close contact up to 12 months. The vaccine, when freeze-dried, remained effective for 12 months stored at room temp., and up to 101 days when stored at 38°C. An account is given of large scale trials using this vaccine in 236,874 pigs, administered either with or without immune serum. About 0·5% of the vaccinated pigs died. It is stated that the vaccine should not be used in pregnant sows since it may produce abortion or affect the offspring.

—E.G.

Spalatin, J. & Lulić, V. (1955). Beitrag zur Kenntnis der Temperaturkurve der mit lapinisiertem Schweinepestvirus behandelten Kaninchen. **[The temperature curve of rabbits treated with lapinized swine fever virus.]**—*Arch. exp. VetMed.* **9**, 190-193. **1254**

The authors studied the temp. in 3 groups of 10 rabbits each, of which group 1 had been given injections of lapinized swine fever virus, and group 2 injections of suspensions in saline of organs from healthy rabbits. Rabbits of the third group served as controls. Although only rabbits of group 1 developed fever, its duration and degree varied considerably in individual rabbits. There is a graph showing the fever curves.—E.G.

Rodabaugh, D. E. & Elder, C. (1955). **The effect of a low protein ration in hog cholera immunization.**—*J. Amer. vet. med. Ass.* **126**, 418-421. **1255**

The feeding of sows and their piglets with a ration grossly deficient in protein did not prevent the development of full immunity in the piglets when vaccinated with swine fever virus plus antiserum. With a modified virus vaccine either alone or with antiserum, a small percentage did fail to become solidly immune, but, as the majority developed full immunity, some factor other than protein appeared to be involved. Pigs on a balanced ration and pasture developed full immunity.

—A. Ackroyd.

Nani, S., Scatozza, F. & Tiecco, G. (1955). Ricerche sperimentali sul virus di Teschen. I. Titolazione del ceppo in studio. **[Studies on the virus of Teschen disease. I. Titration.** —*Boll. Ist. sieroter. Milano.* **34**, 314-317. [English and French summaries.] **1256**

Nani, S., Giglietti, A. & Tiecco, G. (1955). Ricerche sperimentali sul virus di Teschen. II. Ulteriori indagini elettroforetiche su carta in sieri di suini trattati con diverse concentrazioni di virus. **[Studies on the virus of Teschen disease. II. Paper electrophoresis of the serum of experimentally infected pigs.]** —*Ibid.* 318-326. [English and French summaries.] **1257**

Nani, S., Scatozza, F. & Tiecco, G. (1955). Ricerche sperimentali sul virus di Teschen. III. Comportamento nel fenomeno di emoagglutinazione. **[Studies on the virus of Teschen disease. III. Haemagglutination.]** —*Ibid.* 327-331. [English and French summaries.] **1258**

Pedini, B., Nani, S. & Giglietti, A. (1955). Ricerche sperimentali sul virus di Teschen. IV. Variazioni del quadro emato-morfologico e glicemico nell'infezione sperimentale del suino. **[Studies on the virus of Teschen disease. IV. Changes in the morphology and sugar level of the blood in experimental infection of pigs.]**—*Ibid.* 332-341. [English and French summaries.] **1259**

Nani, S., Tiecco, G. & Scatozza, F. (1955). Ricerche sperimentali sul virus di Teschen. V. Prova di neutralizzazione sul suino con gamma globuline antipoliomielitiche di provenienza umana. **[Studies on the virus of Teschen disease. V. Action of poliomyelitis immune serum on the virus of Teschen disease.]** — *Vet. ital.* **6**, 906-912. [English, French and German summaries.] **1260**

I. A 10% suspension of virulent c.n.s. tissue in beef broth at pH 7·4, in dilutions of 10^{-2}–10^{-5}, was injected subdurally into 25 pigs; normal c.n.s. tissue was injected into 5 other pigs while 4 other pigs were left untreated as controls. The pigs were 40 days old, av. wt. 7 kg. The 50% paralytic end point (PD_{50}) was assessed at $10^{-3.2}$, which also conferred a certain degree of resistance to reinfection with 10 PD_{50} of virus.

II. Paper electrophoresis was carried out with the serum of the pigs used in the previous experiment. Heart blood was drawn:— (a) before inoculation; (b) during the incubation period (on the 5th day); (c) during the paralytic phase; and (d) on the 30th day (in the case of animals which had not shown symptoms); in the case of controls the third bleeding was carried out on the 12th day

after inoculation (the average pre-paralysis period in infected pigs). A constant increase in the γ-globulins and a corresponding decrease in the α- and β-globulins, were observed mainly in animals which had shown no symptoms. The dose of virus did not appear to have any influence on these changes. The albumin values varied.

III. Haemagglutination tests were carried out with the virus under study. Antigen was prepared from infected c.n.s. tissue of pigs. Normal c.n.s. tissue was used as control. Dilutions were carried out with buffered solutions having a pH 5·5–8·8. Various types of r.b.c. were employed and the tests were carried out at different temperatures, viz., 37°, 22° and 4°C. Results led to the conclusion that the virus has no haemagglutinating powers.

IV. Blood samples were obtained as in II above. In addition, in the case of animals subjected to a second inoculation after 30 days under observation, blood was drawn :— before re-infection; during paralysis; and 30 days after re-infection. The concentration of virus did not seem to have any influence on results. There was a slight fall in Hb and r.b.c. in infected animals; this decrease was more marked in pigs showing symptoms. There was a marked decrease in w.b.c. after subdural inoculation of virus. This leucopenia changed to a neutrophile leucocytosis with the onset of paralysis. The erythrocyte sedimentation rate rose only when the course of infection was protracted especially when no symptoms were manifest or in those cases where symptoms appeared after re-infection. The blood sugar dropped slightly in animals which developed paralysis.

V. Poliomyelitis immune serum did not neutralize the virus of Teschen disease in experimental infection.—T.E.G.R.

Hecke, F. (1955). Untersuchungen über den Wert von Schutzimpfungen für die Bekämpfung und Tilgung der Ansteckenden Schweinelähmung auf Grund einer Analyse des Seuchengeschehens mit statistischen Methoden. **[Value of immunization against Teschen disease.]**—*Wien. tierärztl. Mschr.* **42,** 606-634. [English, French and Italian summaries.] **1261**

Following vaccination against porcine encephalomyelitis in 8,346 pigs with an adsorbed vaccine, outbreaks occurred in 7 herds within 14 days after vaccination. In 4 other herds there were outbreaks in pigs which had been vaccinated as piglets. There were no new outbreaks in communities where, owing to high incidence, all pigs had been vaccinated, whereas outbreaks continued to occur in those where incidence had been low and only part of the stock had been vaccinated.—E.G.

Shope, R. E. (1955). **The swine lungworm as a reservoir and intermediate host for swine influenza virus. V. Provocation of swine influenza by exposure of prepared swine to adverse weather.**—*J. exp. Med.* **102,** 567-572. [Abst. from author's summary.] **1262**

Twenty-five pigs, infested with lungworms infected with masked swine influenza virus, were exposed to adverse weather conditions on one or more occasions. Four developed apparent swine influenza, whilst 6 others showed serological evidence of infection. The remaining 15, as well as 8 lungworm-free control pigs, failed to show evidence of infection, despite repeated exposures to adverse weather. It was concluded that some feature of the weather to which the animals were exposed was responsible for provoking masked influenza virus to infectivity.

Macpherson, R. & Shanks, P. L. (1955). **The comparative incidence of pneumonia in sows and in bacon pigs with suggestions on the establishment of a pneumonia-free herd.**—*Vet. Rec.* **67,** 533-534. **1263**

Statistics from a bacon factory indicated that old sows have a much smaller percentage (5·8%) of virus pneumonia lesions than young gilts (55·4%). These facts are associated with the practice in the area (Aberdeenshire) of establishing pneumonia-free herds starting with a foundation stock of old sows, isolation of sow and litter and ruthless culling of coughing litters.—W. S. Marshall.

Schmid, G. (1955). Über Prophylaxe und Therapie der ansteckenden Bronchopneumonie der Schweine. **[Prophylaxis and treatment of contagious broncho-pneumonia in pigs.]**—*Schweiz. Arch. Tierheilk.* **97,** 401-412. [English, French and Italian summaries.] **1264**

The pathology, epidemiology and economic importance of contagious bronchopneumonia in pigs is discussed. A concentrated vitamin D_2 preparation, procaine penicillin and vitamin A proved to be of value in treatment and prophylaxis of experimental and field cases. Dosage and the correct time for prophylactic applications are discussed.

—W. G. Siller.

LARIN, N. M., MANSI, W., MONTGOMERIE, R. F., WOODROW, C. E. & MCBEE, J. A. (1955). **Canine virus forum.**—*Vet. Rec.* **67,** 781-790. **1265**

The members of the forum agreed that egg adapted vaccine was not a good therapeutic agent for dogs not previously immunized which might be in the incubative stage of "hard pad" disease as it did appear at times to trigger off the disease. In developed cases, it seemed to have a curative effect, but the reason for this was obscure. The occurrence of canine virus hepatitis which was said to be widespread, and hard pad disease at the same time was considered possible. Laboratory evidence indicated that a carrier state in canine virus hepatitis does not exist, that dogs which have recovered remain potentially infective for only 15 days, and that puppies, less than 10 weeks old, although without circulating antibody, are resistant to the disease, but some members considered that commercial kennels having hepatitis could not be rendered free from the disease and that subclinical infection and a carrier state occurs. It was suggested that a carry-over of infection rather than a carrier state might account for endemic infection. Some members asserted that distemper prophylaxis of puppies at 12 weeks of age with egg adapted vaccine was usually successful provided there had been no contact with any possible source of infection, and that this vaccine was safer than killed tissue vaccine followed by live virulent virus, but one member considered that there is more than one type of distemper virus and that the egg adapted vaccine confers immunity against only one type. In the laboratory no immunological difference between strains has been found. Instillation of live canine hepatitis virus into the conjunctiva has been successful in producing immunity. Low foetal vitality and "fading" puppies was not considered to be associated with virus diseases.—A. ACKROYD.

KRETZSCHMAR, C. (1955). Zur Frage der Einschlusskörperchen bei der Staupe des Nerzes. **[On the question of inclusion bodies in distemper in mink.]**—*Mh. Tierheilk.* **7,** 173-180. **1266**

K. regarded the presence of acidophile, intracytoplasmic, vacuolated inclusion bodies in the tracheal and bronchial epithelium as pathognomonic for distemper in mink. Similar but often homogeneous bodies were present in the epithelium of the urinary bladder.—R.M.

MARTIN, L.-A. & DELAGE, B. (1955). Xénodiagnostic étiologique de la maladie de Rubarth à l'aide de la souris. **[Use of mice in the diagnosis of canine virus hepatitis.]**—*Bull. Acad. vét. Fr.* **28,** 233-238. **1267**

It is possible, by inoculating white mice with the peripheral blood of dogs with canine virus hepatitis, to induce the formation of complement-fixing antibodies. The infection can be diagnosed by this means, but the mouse sera must first be examined for natural antibodies to canine virus hepatitis.

—I. W. JENNINGS.

MÜLLER, J. & THORDAL-CHRISTENSEN, A. (1954). **Cultivation of the virus of infectious canine hepatitis (Rubarth) in tissue culture.**—*Nord. VetMed.* **6,** 767-779. [In English. German and Danish summaries.] **1268**

The virus of infectious canine hepatitis was grown on testicular tissue of young dogs and on canine foetal tissue. The roller tube culture technique was used. The minimum period of incubation was 11 days. Growth was confirmed by characteristic morphological changes in the tissue, by dog inoculation, and by the complement-fixation test. Ten subcultures were made and the virus retained its virulence for dogs.—T.E.G.R.

BRION, A., BERTRAND, M. & COTTEREAU, P. (1954). Sur la leucopénie infectieuse des chats. Présence dans l'organisme infecté de corpuscles analogues aux Chlamydozoaceae. Réceptivité du furet et de la souris blanche. **[Infectious enteritis of cats. Susceptibility of the ferret and the mouse.]**—*C. R. Soc. Biol. Paris.* **148,** 355-358. **1269**

Two ferrets, inoculated (i/p and s/c) with a suspension of liver, spleen and mesenteric lymph nodes from a cat that had died from feline enteritis, died from enteritis 7 days later. Inclusion bodies resembling those of the psittacosis-lymphogranuloma group were present in stained smears from the liver; similar bodies had previously been observed in smears from infected cat liver. They were also present in smears from the liver of mice inoculated i/p and from the brain of those inoculated intracranially with material from infected cats, but in mice the infection was inapparent.

—W. MANSI.

JORDAN, J. & MIRICK, G. S. (1955). **An infectious hepatitis of undetermined origin in mice. I. Description of the disease. II.**

Characteristics of the infective agent.—*J. exp. Med.* **102,** 601-616 & 617-630. [Authors' summary modified.] **1270**

I. Serial i/p passage in mice of a saline extract of the pooled livers, spleens, and kidneys of such animals led to the demonstration after 3 or more passages of a transmissible agent (AHA) causing hepatitis. The mice developed an illness after 3 to 4 weeks characterized by hepatosplenomegaly, and serous ascites. Spontaneous diuresis and recovery usually occurred during the subsequent 2 to 4 weeks. Histological studies of the livers showed diffuse mononuclear infiltrations, focal accumulations of mononuclear cells, perivascular mononuclear cuffing, dilated sinusoids, and occasionally focal areas of necrosis. Mice which recovered from the disease showed no noteworthy resistance to it, and their sera failed to protect against the infectious agent. Attempts to infect rabbits, g. pigs, monkeys, and chick embryos gave negative results, but young hamsters developed the disease in mild form.

II. A transmissible agent (AHA) causing ascites and hepatitis in mice was described. No known pathogenic bacteria, fungi, protozoa, leptospira, rickettsia, or viruses were demonstrated in the infected mice. AHA does not pass through a Seitz filter and differs in most respects from the agents previously described which produce hepatitis in mice.

Keller, W. & Vivell, O. (1955). Ein Beitrag zur Problematik des Tierversuches, der Virusisolierung und Identifizierung. **[Problems of animal experiments and the isolation and identification of viruses.]**—*Arch. exp. VetMed.* **9,** 167-178. **1271**

The authors discussed the danger of specific mouse viruses like murine encephalomyelitis (Theiler's virus), murine choriomeningitis and ectromelia becoming activated in mice used for the isolation of viruses and causing confusion. One of two viruses isolated during 1943–44 by intracerebral mouse inoculation of c.s.f. from human patients, has since been identified by serological tests as Theiler's virus. The possibility was also discussed of human carriers of animal viruses.—E.G.

Schäfer, W. (1955). Sero-immunologische Eigenschaften "Inkompletter Formen" des Virus der klassischen Geflügelpest. **[Sero-immunological properties of "incomplete forms" of fowl plague virus.]**—*Arch. exp. VetMed.* **9,** 218-230. **1272**

While it was shown experimentally that the non-infective, "incomplete forms" of fowl plague virus possess specific antigens which are precipitated by fowl plague specific rabbit serum, they were incapable of evoking active immunity in fowls. Pentose nucleic acid was demonstrated in the bound antigens of fowl plague virus and in the "incomplete forms".

—W. G. Siller.

Woernle, H. (1955). Ein Beitrag zum Infektionsablauf der atypischen und klassischen Geflügelpest. **[Course of infection in Newcastle disease and fowl plague.]** — *Tierärztl. Umsch.* **10,** 324-328. **1273**

Repeated blood examinations revealed 4 distinct phases in the course of Newcastle disease infections:— (1) phase of panagglutinin formation; (2) phase of viraemia; (3) phase of virus and antibody balance; and (4) phase of humoral antibody formation and immunity. All birds infected with fowl plague virus die either during the first or second phase. The third phase of Newcastle disease, which may persist for a long time, particularly in young birds, is often characterized by a variety of nervous symptoms and diagnosis by means of the haemagglutination-inhibition (H.I.) test is often possible only after stimulation of antibody formation with dead vaccine, which upsets the balance in favour of the antibodies. It is possible to bring an outbreak of Newcastle disease to a close by correctly timed application of dead vaccine. The last phase of the disease is readily recognized by the H.I. test.—W. G. Siller.

Siegmann, O. & Woernle, H. (1955). Zum Antigenspektrum der atypischen Geflügelpest (Newcastle Disease). **[Antigenic spectrum of Newcastle disease.]**—*Arch. exp. VetMed.* **9,** 202-211. **1274**

Sera, each specific to one of 9 different strains of Newcastle disease virus, were subjected to the haemagglutination-inhibition test; the same 9 strains were used as antigen. Homologous serum inhibited haemagglutination in far greater dilutions than heterologous serum. The authors therefore used the terms "absolute titre" and "relative titre" to designate a homologous and a heterologous reaction, respectively.—W. G. Siller.

McCollum, W. H. & Brandly, C. A. (1955). **Destruction of virus hemagglutination inhibitor of egg-white by Newcastle disease virus.**—*Proc. Soc. exp. Biol., N.Y.* **90,** 158-162. [Authors' summary modified.] **1275**

All strains of Newcastle disease virus

studied possessed mucinase. The rate at which egg-white inhibitor was inactivated varied according to the enzyme (virus) concentration and egg-white inhibitor conc. and could be correlated with one known property only—dissociation of the virus from r.b.c. The enzyme was fairly stable in the presence of formol.

RAO, S. B. V. (1955). **A note on experiments in day-old chick vaccination against Hertfordshire strain of Newcastle disease.**—*Indian vet. J.* **32,** 105-113. **1276**

Immunization by spray exposure of 2-day-old chicks with the attenuated B_1 strain of Newcastle disease virus gave protection in only 33·8%, but vaccination with 0·5 ml. of a formol-inactivated Hertfordshire (Asiatic) strain in "falba" and mineral oil resulted in the development of high haemagglutination-inhibition titres after 2 weeks and significant viral neutralizing antibodies and 100% protection after 3 weeks. It had no ill effects as adduced from the mortality records.

—A. ACKROYD.

KARCZEWSKI, W., TEKLIŃSKA, M. & CĄKAŁOWA, A. (1955). Zależność zjawiska interferencji od wieku szczepionych kurcząt przy stosowaniu szczepionki indyjskiej. **[Effect of age on the interference phenomenon in fowls immunized against Newcastle disease.]** — *Méd. vét., Varsovie.* **11,** 590-593. **1277**

In a number of outbreaks of Newcastle disease the affected birds were destroyed and the in-contact ones immunized with Mukteswar vaccine. Only a small percentage of the vaccinated birds died and the rest remained healthy. The authors attribute this to the interference phenomenon. In a series of tests all the experimental birds withstood challenge 48 hours, and some even 24 hours, after vaccination.—M. GITTER.

VAN DORSSEN, C. A. & KUNST, H. (1955). Over de gevoeligheid van eenden en diverse andere watervogels vorr eendenpest. **[Susceptibility of ducks and various other water fowl to duck plague virus.]**—*Tijdschr. Diergeneesk.* **80,** 1286-1295. [In Dutch. English, French and German summaries.] **1278**

During the past 30 years only 4 outbreaks of "duck plague" have been reported in the Netherlands [see also *V.B.* **21,** 2594 and **23,** 1260]. The authors tested the susceptibility of 24 species of wild water fowl and 3 breeds of domestic duck to the i/m injection of the virus. Khaki Campbell, Indian Runner and Pekin ducks died, as did most species of wild duck, wild geese, and the mute swan. Gulls did not react. The teal, pintail, mallard and the grey call duck did not die and produced antibodies against the virus. It was suggested that the mallard served as a reservoir of infection for domestic ducks.—R.M.

CHONG SUE KHENG, (1955. **Infectious laryngotracheitis in Malaya.** — *J. Malay. vet. med. Ass.* **1,** 3-12. **1279**

Two outbreaks are described in 6-month-old fowls. Test birds were readily infected by intratracheal inoculation of a suspension of infected trachea. Test birds infected *per cloacam* with egg-passaged virus did not develop disease and were subsequentlv immune to challenge. The agent was identified by neutralization and cross immunity tests.

—M.G.G.

YARNUKH, V. S. (1955). **[Disinfection of air in avian infectious laryngotracheitis.]** — *Veterinariya, Moscow.* **32,** No. 10, pp. 78-80. [In Russian.] **1280**

Evaporation of lactic acid, going on throughout the day at intervals of 1–2 hours in a chicken house, was found to have no toxic effects and to cut down considerably the incidence of infectious laryngotracheitis. The experiment, although carried out on a very large scale, does not appear to have been sufficiently controlled.—A. MAYR-HARTING.

SHARP, D. G., BEARD, D. & BEARD, J. W. (1955). **Morphology of characteristic particles associated with avian erythroblastosis**—*—Proc. Soc. exp. Biol., N.Y.* **90,** 168-173. [Authors' summary slightly modified.] **1281**

Spheroidal particles about 102 mμ in diameter, which may be the aetiological virus, were obtained by ultracentrifugation of the blood plasma of chickens with erythroblastosis. Micrographs of unshadowed preparations showed circular images of an appearance suggesting that the particles consist predominantly of a watery, low-electron constrast, gel-like material surrounding a small relatively dense internal structure. The findings were compared with those obtained in the analogous studies of particles representing the virus of myeloblastosis and that of one form of lymphomatosis.

YATES, V. J. & FRY, D. E. (1955). **Further studies of the inapparent virus disease of chickens.**—*Proc. 27th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.*, Durham, New Hampshire, June 14-15, 1955. pp. 5. **1282**

Using a serum neutralization test, evidence of this virus disease was found to be widespread in fowls in a laying test and among fowls at the East Lansing Laboratory. Nervous symptoms were produced in a small percentage of intracerebrally inoculated chicks. Quails and turkeys proved resistant to infection. [See also *V.B.* **25,** 3230.]—D. Luke.

Lecce, J. G., Sperling, F. G., Hayflick, L. & Stinebring, W. (1955). **Tendovaginitis with arthritis, a new syndrome of chickens; isolation and characterization of an infectious agent.**—*J. exp. Med.* **102,** 489-497. **1283**

This disease, affecting 5–30% of an infected flock and usually fatal in 3–4 weeks, is characterized by weakness, emaciation, anaemia, and finally diarrhoea with greenish faeces, and a moderately turbid to caseous exudate within and around the synovial tissues of the tendons and joints. Cultures, stains, and dark-field studies of material containing the infectious agent for spirochaetes, bacteria, and pleuropneumonia-like organisms were negative. The agent passed through a bacteria-retaining filter but with a drop in titre, and multiplied in chick embryos, especially in the yolk sac. It was most sensitive to the tetracycline range of antibiotics, less so to chloramphenicol and dihydrostreptomycin, and resistant to penicillin. It had a cytopathogenic effect in tissue cultures of chick heart fibroblasts, but caused no gross lesions in unweaned or newly weaned mice, young pigs, or g. pigs. The electron microscope showed it to be a rigid, dense coccobacillary element 0·2–0·5μ in size. It may be a rickettsia or possibly a large virus.—A. Ackroyd.

Cover, M. S. & Galeta, J. N. (1955). **Studies on avian arthritis of chickens.**—*Proc. 27th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.*, Durham, New Hampshire, June 14-15, 1955. pp. 6. **1284**

The arthritis can be reproduced experimentally with liver and spleen material or joint and tendon exudate. No bacterial agent could be isolated. The causal agent can be passaged serially in chick embryos. A possible serological test is being sought.—D. Luke.

Snoeyenbos, G. H. & Olesiuk, O. M. (1955). **Studies of an agent producing arthritis in turkeys.**—*Proc. 27th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.*, Durham, New Hampshire, June 14-15, 1955. pp. 3. **1285**

From a flock of turkeys an agent was isolated which could be passaged serially in chick embryos. Infection could be induced more readily in chickens than in turkeys. Details of symptoms and P.M. findings are given.—D. Luke.

Fabricant, J., Richard, C. G. & Levine, P. P. (1955). **The pathology of virus hepatitis of ducklings—a preliminary report.** — *Proc. 27th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.*, Durham, New Hampshire, June 14-15, 1955. pp. 7. **1286**

The only consistent macroscopic change was seen in the liver, which was much enlarged, soft, and pale in colour. Histologically no significant lesions were found in any of the organs examined except in the liver. The changes were primarily a necrosis of the parenchymal cells.—D. Luke.

Giroud, P. & Jadin, J. (1955). Le virus des Bashi: systématique, pouvoir pathogène, tranmission. **[A psittacosis-like virus in man, domestic and wild animals in the Belgian Congo.]**—*Ann. Soc. belge Méd. trop.* **35,** 9-13. [In French. Flemish summary.] **1287**

An organism was discovered in the Belgian Congo, causing disease in man and animals. It belongs possibly to the rickettsias or to the psittacosis group of viruses. In man, the disease is an exanthematic fever, and may be accompanied by encephalitis, pneumonia, hepatitis or nephritis. Cattle, sheep and goats develop lung lesions and may abort. Rats also carry infection. Diagnosis can be made by the c.f. test. The rodents *Mastomys coucha* and *Pelomys fallax* are capable of transmitting the disease. The virus has been isolated from the ticks, *Haemaphysalis leachi* and *Ornithodoros moubata,* and from the larvae of *Euschöngastia penetrans.*—I. W. Jennings.

—. (1953). **Advances in virus research. Vol. I.** Edited by: Smith, K. M. & Lauffer, M. A.] pp. vii+362. New York: Academic Press, Inc. $8. **1288**

During recent years the amount of work published on virus diseases has become so large that few workers are able to read, in the original, papers other than those associated with their own particular problems. A work of this kind is therefore particularly useful in that progress in other fields can be kept in view.

This volume contains articles on:— The properties of bacteriophages (H. T. Epstein); The interactions between viruses and virus

strains (C. W. Bennett); The transmission of plant viruses by cicadellids (L. M. Black); Insect viruses (G. H. Bergold); The multiplication of influenza virus (Werner Henle); Poliomyelitis (J. L. Melnick); The purification and properties of animal viruses (D. G. Sharp); and virus nucleic acids (Roy Markham). Each is a detailed exposition of its subject with an extensive bibliography. As is usual in a work of this kind, the style varies with the author and, although each chapter will prove useful reference, some are not as easy to read as Werner Henle's excellent summary of the work that has been done on the multiplication of influenza virus.

The book is well produced and should be available in every virological laboratory.

—J. R. Hudson.

Angeloff, S. & Kujumgiev, J. (1955). La coxiellosi—febbre Q—in Bulgaria. **[Q fever in Bulgaria.]** — *Zooprofilassi.* **10,** 415-420. **1289**

Q fever was diagnosed in Bulgaria in the occupying German troops. Later it was diagnosed in the civilian population. In the years 1950–54, 233 cases were detected in man and 69 in animals (51 sheep, 10 cattle, 7 goats and a buffalo). The main centres of infection were near the Greek and Yugoslavian borders.

The authors confirm that transmission occurs between man and animals, and believe that it is mainly air-borne. There is a close connexion between the lambing season and the occurrence of outbreaks of Q fever in man.

—I. W. Jennings.

Giroud, P., Roger, F. & Contini, A. (1955). Encéphalite du chien. Isolement d'une souche de néo-rickettsies. Comportement sérologique. **[Isolation and serological behaviour of a strain of rickettsia from a dog with encephalitis.]**—*C. R. Acad. Sci., Paris.* **240,** 1950-1952. **1290**

The serum of a dog with encephalitis agglutinated a murine typhus antigen and psittacosis antigen "X.14." P.M. examination revealed the presence in the brain of inclusion bodies, 300 mμ diam. An agent isolated from the brain was transmitted to rabbits, chick embryos and gerbils. [See also *V.B.* **25,** 2360.]

—R.M.

Philip, C. B. & White, J. S. (1955). **Disease agents recovered incidental to a tick survey of the Mississippi Gulf Coast.**—*J. econ. Ent.* **48,** 396-400. **1291**

One strain of *Rickettsia burneti* and 8 of "maculatum disease" agent [a rickettsia recovered from ticks taken off cows in Texas by Parker *et al.* (1939)] were recovered in tests on *Amblyomma americanum* and *A. maculatum* taken off livestock or vegetation. Two cases of Rocky Mountain spotted fever occurred during the survey, but no strains of the disease agent were recovered from local ticks.—D. Poynter.

See also abstr. **1146** (bacteriophage for typing of S. cholerae-suis); **1375** (bovine malignant catarrh and listerellosis); **1376** (report, infectious diseases of cattle in the U.S.A.); **1472** (report, Australia); **1473** (report, Southern Rhodesia).

IMMUNITY

Downe, A. E. R. (1955). **Inhibition of the production of precipitating antibodies in young rabbits.**—*Nature, Lond.* **176,** 740-741. **1292**

Rabbits exposed prenatally and up to the 5th week after birth to fowl serum antigen failed to develop antibody, and were still incapable of antibody response to repeated injections of fowl serum at 4 months old, but did develop antibody to Bronze turkey serum. The cross reaction in the precipitin test between fowl and Bronze turkey serum, which occurs with normal antiserum, did not occur with this antiserum; this suggests that antisera produced by this method may be of considerable use in specific detection of avian bloods.

—A. Ackroyd.

Pillemer, L., Schoenberg, M. D., Blum, L. & Wurz, L. (1955). **Properdin system and immunity. II. Interaction of the properdin system with polysaccharides.**—*Science.* **122,** 545-549. [For part I, see *V.B.* **25,** 2441.] **1293**

Properdin, acting with complement, exerts certain immune reactions such as the inhibition of some micro-organisms. The combined effect of properdin and zymosan inactivates C′3. Substances other than zymosan (*e.g.* some endotoxins, bacterial cell walls, dextrans, mucins) also combine with properdin, but the inactivation of C′3 follows only in some cases; the combination of these substances with properdin depends upon the presence of complement and magnesium ions. The possible relationships to natural immunity are discussed.—G. Fulton Roberts.

I. Thomas, L., Brunson, J. & Smith, R. T. (1955). **Studies on the generalized Shwartzman reaction. VI. Production of the reaction by the synergistic action of endotoxin with three synthetic acidic polymers (sodium polyanethol sulfonate, dextran sulfate, and sodium polyvinyl alcohol sulfonate).**—*J. exp. Med.* **102,** 249-461. **1294**

II. Thomas, L., Smith, R. T. & von Korff, R. (1955). **Studies on the generalized Shwartzman reaction. VII. The role of fibrinogen in the deposition of fibrinoid after combined injections of endotoxin and synthetic acidc polymer.**—*Ibid.* 263-278. **1295**

I. & II. Details are given of the production of Shwartzman reactions in rabbits by two i/v injections of bacterial endotoxins or one injection of each of 3 artificial polymers, dextran sulphate, polyanethol and sodium polyvinyl alcohol sulphonate. The toxic effect of one dose of endotoxin together with each of the polymers was shown to be synergistic when the injections were closely spaced in time. The reaction was inhibited by the administration of heparin but not by nitrogen mustard; cortisone did not affect the reaction. In all animals receiving a combination of endotoxin and polymer a marked and rapid fall in circulating fibrinogen was observed. This fall was prevented by the administration of heparin; it did not occur after injections of endotoxin (2 injections) or polymer alone. From these other experiments, the authors suggested that in the production of the Shwartzman reaction by two injections of endotoxin, the first injection may make available substances similar in property to the acid polymers (leucocytes being concerned in this part of the reaction) which precipitate plasma fibrinogen appearing after the second injection to form intravascular fibrinoid. The ability of heparin to protect against the reaction may be due to its property of preferentially combining with the fibrinogen.—G. Fulton Roberts.

I. Kesztyüs, L., Salánki, J. & Koller, M. (1955). Nervensystem und Immunität III. Die Wirkung von Neurotomie auf das Arthus-Sacharow-Phänomen. **[The nervous system and immunity III. Effect of neurotomy on the Arthus-Sacharow-phenomenon.]**—*Acta microbiol. hung.* **2,** 337-341. [Russian summary.] **1296**

II. Kesztyüs, L., Csernyánszky, H., Koller, M. & Salánki, J. (1955). Nervensystem und Immunität IV. Die Wirkung von Neurotomie und Narkose auf das Shwartzman-Phänomen. **[The nervous system and immunity IV. Effect of neurotomy and anaesthesia on the Shwartzman phenomenon.]**—*Ibid.* 343-352. [Russian summary.] **1297**

III. Kesztyüs, L., Szilágyi, T. & Csernyánszky, H. (1955). Nervensystem und Immunität V. Die Wirkung von Neurotomie auf die Diptherietoxin-Empfindlichkeit der Haut. **[The nervous system and immunity V. Effect of neurotomy on skin sensitivity to diphtheria toxin.]**—*Ibid.* 353-358. [Russian summary.] **1298**

I. In ten rabbits in which a portion of the left sciatic nerve had been removed, both hind quarters were sensitized 14 days later by s/c injections of 1 ml. of sterile horse serum at 4-day intervals. An equal number of normal controls were used. On the neurectomized quarter, the Arthus' phenomenon either failed to occur, or occurred only in a mild form. Similar results were obtained in 8 rabbits in which a circular area of skin on the back had been denervated surgically.

II. Neurectomy of the sciatic nerve and denervation of an area of the skin did not inhibit the occurrence of the Shwartzman phenomenon. The pathological mechanism of the Shwartzman phenomenon differs fundamentally from that of the Arthus' phenomenon. Inhibition of the Shwartzman phenomenon was observed only when narcosis was induced before sensitization and challenge. Leucopenia did not occur in the anaesthetized rabbits. This was considered to indicate that the c.n.s. is closely related with the phagocyte system, and to cast doubt upon the importance of leucopenia as a primary cause of the Shwartzman phenomenon.

III. Neurectomy of the sciatic nerve in rabbits led to a decrease in the sensitivity of the skin to diphtheria toxin.—F. K. Leeb.

Buxton, J. C., Brooksbank, N. H. & Coombs, R. R. A. (1955). **Haemolytic disease of newborn pigs caused by maternal iso-immunisation.**—*Brit. vet. J.* **111,** 463-473. **1299**

Haemolytic anaemia in new-born piglets is similar in aetiology to the condition occurring in man. The authors' cases were normal at birth. All members of some litters were dead within 48 hours, being severely jaundiced; in other litters some members showed marked jaundice at the age of 4 days, while

the others were merely anaemic. Recovery occurred in a few cases. The P.M. findings are reported. The speed of destruction of r.b.c. by maternal antibody appeared to determine the degree of jaundice. The disease is diagnosed serologically.—W. R. Bett.

See also absts. **1097** *and* **1100** (anthrax spore vaccine); **1099** (activation of latent infections with anthrax vaccine); **1101** (haem-agglutination test in anthrax); **1109-1119** (TB.); **1123** (Johne's disease); **1128-1129** and **1321** (swine erysipelas); **1134** (pasteurellosis); **1149** (report of pullorum disease antigen committee); **1150** (serological diagnosis of pullorum disease); **1156-1166** (brucellosis); **1169** (leptospirosis); **1179** (V. fetus infection); **1188** (diphtheria and tetanus toxoid); **1192** (epizootic lymphangitis); **1207** (chronic respiratory disease); **1224-1227** (F. & M. disease); **1229-1235** (rabies); **1239** (Western equine encephalomyelitis); **1244-1246** (rinderpest); **1252-1255** (swine fever); **1256-1261** (Teschen disease); **1272-1277** (fowl plague and Newcastle disease); **1320** (trichinella); **1335** (specific antigen in sera of carcinoma patients).

PARASITES IN RELATION TO DISEASE [GENERAL]

O'Meara, D. C. (1955). **Blood parasite infections of wild and domestic ducks in Maine.**—*Proc. 27th Ann. Meet. N.E. Conf. Lab. Wkrs Pullorum Dis. Contr.*, Durham, New Hampshire, June 14-15, 1955. pp. 3. **1300**

Blood smears were obtained from wild black duck *(Anas rubipes)* and wild wood duck *(Aix sponsa)*. *Leucocytozoon* infections were found in 332 of 437 black ducks and from 260 of 422 wood ducks. Forty-three of the black duck smears and 284 of the wood duck smears contained *Haemoproteus* spp. Microfilariae were seen in 126 of the black duck specimens and in 82 of the smears from wood ducks. All three parasites have been recovered from domestic ducks.—D. Luke.

Harbour, H. E. (1955). **Recent advances in parasiticides.**—*Vet. Rec.* **67,** 1021-1024. Discussion. pp. 1024-1029. **1301**

Dieldrin, a useful agent for the control of blowfly in sheep, and toxaphene, for the control of cattle ticks, especially the vectors of theileriasis, are among the new synthetic parasiticides under review. The administration of insecticides by the oral and subcutaneous routes is discussed. Piperazine adipate and other piperazine compounds are valuable anthelmintics effective against ascarids in all animals, nodular worms in pigs and small strongyles in horses.—T.E.G.R.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Wright, P. & Davis, E. C. (1955). **Insecticides for body-strike prevention in sheep and their effects on wool values.**—*Aust. vet. J.* **31,** 242-243. **1302**

An estimate was made of the loss in value of wool from sheep dipped in dieldrin (0·1%), toxaphene (0·5%), D.D.T. (1·0%) and benzene hexachloride (0·05%). As the decrease was less than 2% it was considered economically insignificant.—M. D. Murray.

Riches, J. H. & O'Sullivan, P. J. (1955). **The value of DDT, BHC, aldrin and dieldrin for the protection of sheep against body strike.**—*Aust. vet. J.* **31,** 258-262. [Authors' summary modified.] **1303**

The efficiency of D.D.T., benezene hexachloride (B.H.C.), aldrin and dieldrin was compared by exposing treated sheep to gravid female *Lucilia cuprina* in an insectary and also to newly hatched maggots placed on the skin. All gave much longer protection against both oviposition and the implants of larvae when "jetted" to saturate the fleece and wet the skin than when sprayed to wet only the surface of the fleece. Much longer protection could be expected when protection was considered in terms of the establishment of larvae rather than in terms of oviposition. D.D.T. had a much lower efficiency than the other insecticides. When applied by "jetting", the protective period was 6–7 weeks with 0·01% gamma B.H.C., 7–8 weeks with 0·01% aldrin and dieldrin, 13–14 weeks with 0·25% gamma B.H.C., 16–17 weeks with 0·25% aldrin and up to 18 weeks with 0·25% dieldrin. It is suggested that the optimum conc. of aldrin and dieldrin for practical application is 0·05 to 0·1%, which in these experiments was effective for 3–4 months.

Bushland, R. C., Lindquist, A. W. & Knipling, E. F. (1955). **Eradication of screw-worms through release of sterilized males.**—*Science*. **122,** 287-288. **1304**

A general description of the eradication of *Cochliomyia hominivorax* on the island of Curaçao. Control was dependent upon the following factors:— That laboratory bred flies were found to be sterile when the pupae were exposed to gamma- or X-rays, and that though males mated repeatedly, females only mated once. The egg masses recovered from natural females crossed with sterile males

failed to hatch. After preliminary trials, sterile males were liberated at the rate of 400 flies per sq. mile per week. The progress of eradication was judged by the failure of wild flies to attack goats penned in different parts of the island. This was continued from August to January when it was considered that the natural population of *C. hominivorax* had been cleared. No *C. hominivorax* activity had been noticed during the subsequent 9 months. —W. E. Parish.

Kurchikov, A. M. (1954). **[Migration of larvae of *Hypoderma bovis* and pathogenesis of infestation in cattle.]**—*Rep. Ist Soviet Conf. vet. Derm.* Moscow, 1954. pp. 159-160. [In Russian.] **1305**

A brief account of the distribution of *H. bovis* larvae, and the lesions caused by them, in 231 cattle slaughtered at various times of the year.—F. A. Abbey.

Müller, K. (1955). Účinný boj proti střečku hovězímu. **[Control of *Hypoderma bovis* in cattle.]**—*Sborn. čes. Akad. zeměděl sk. Věd, Živoč. Výr.* **28,** 353-362. [In Czech. English and Russian summaries.] **1306**

An account of successful experimental treatment of 1,450 "warbled" cattle with a potassium soap containing benzene hexachloride, pyrethrum and phenol. The value is discussed, with a view to serological diagnosis or even possible immunization, of antigens prepared from alcohol-acetone extracts of larvae. —E.G.

Borchert, A. & Seifert, L. (1955). Über die Beeinflussung der Dasselbeulen durch Kochsalzeinreibungen. **[Effect of application of common salt to the skin on *Hypoderma* larvae.]**—*Arch. exp. VetMed.* **9,** 136-141. **1307**

Application of a 10% saline soln. to the backs of "warbled" cattle resulted in a quicker healing and smaller warble hole than in untreated controls. Beginning in February the soln. was brushed on every 3–4 days, (12–17 applications). Some 445 cattle were used in the tests on various holdings.—M. L. Clarke.

Pouplard, L., Gregoire, C., Koch, H. & Deberdt, A. (1955). Essais de destruction des larves d'hypodermes par administration buccale de phénothiazine. **[Attempts to kill *Hypoderma* larvae by the oral administration of phenothiazine to the host.]**—*Ann. Méd. vét.* **99,** 462-467. **1308**

A mixture of phenothiazine, hexachlorethane and tin di-n-butyl laurate administered to cattle once each month during the winter did not give results significant enough to recommend general use.—D. Poynter.

Kolomiets, Y. S. (1954). **[*Rhinoestrus purpureus* infestation in horses and its control.]**—*Rep. Ist Soviet Conf. vet. Derm.* Moscow, 1954. pp. 186-188. [In Russian.] **1309**

During autumn and winter only first-stage larvae of *R. purpureus* occur in horses, and they are situated in the nasal cavities; as many as 400 larvae were counted in one horse. From March to August second and third-stage larvae appear in the nasal cavities and in the pharynx. The pupal stage lasts for 15–33 days *in vitro*. The most effective remedy was a 3% concentration of the preparation "C-20" [this contains 20% benzene hexachloride (B.H.C.)], introduced into the nasal cavities by means of a metal cannula. The treatment was carried out in the period October-November, followed by a second treatment in February-March.

As a preventive during the flight period of *R. purpureus*, the nasal cavities were sprayed once every 5 days with a suspension of 2 parts of a powder containing 12% B.H.C. in 10 parts of a 3% starch paste. An ophthalmic (conjunctival) test was devised for diagnostic purposes, employing as antigen aqueous extracts of larvae. The test was only effective when performed during the summer. —F. A. Abbey.

Reid, E. T. M. (1955). **Some observations on *Glossina morsitans ugandensis* Vanderplank in the Sudan.**—*Acta trop., Basel.* **12,** 193-221. [In English. French and German summaries.] **1310**

G. morsitans ugandensis is widespread in the southern part of the Sudan in a belt of ironstone country. Immediately to the north of this belt is a route along which cattle migrate annually for grazing. Here the animals contract infection (caused by *T. congolense* and *T. vivax*). Survival of the fly during the dry season is attributed to suitable "micro-climates" under *Mitragyna inermis* (many-stemmed trees which remain in leaf during the greater part of the year and have no undergrowth round them) and to a readily available food supply (game, which is plentiful). Seasonal fly movement has been observed. During the dry season there is a concentration towards the *M. inermis* trees and during the rains, when flooding occurs, the *Glossina* go to the ridges and higher thickets. This movement seems to be correlated with

that of game. Both larvae and pupae are found in and under the trees and it seems that breeding takes place mostly towards the end of the dry season. Pupae emerge after 16 days, on an average; they do not survive desiccation or excessive moisture. Of 834 specimens collected 83 were non-viable and only 8 were parasitized.—T.E.G.R.

MUTOVIN, V. I. (1954). **[Contact insecticides in the control of vectors of equine encephalomyelitis.]**—*Rep. Ist Soviet Conf. vet. Disinfect.* Moscow, 1951. pp. 161-170. [In Russian.] **1311**

For spraying farm buildings and animals, M. recommended 0·5% D.D.T. or benzene hexachloride (B.H.C.) suspended in petrol. The petrol rapidly evaporates, to leave a deposit of insecticide on the object sprayed. For dips 80 parts creolin, heated to 60°C., were mixed with 20 parts D.D.T. or B.H.C. This mixture was diluted with water before use, to give a final conc. of 2·4% creolin and 0·6% of D.D.T. or B.H.C. Another mixture was 300 g. D.D.T., 300 g. petrol and 400 g. creolin; one part of the mixture was diluted with 33 parts of water.—F. A. ABBEY.

EGOROV, I. A. (1954). **[D.D.T. and B.H.C. in veterinary practice.]**—*Rep. Ist Soviet Conf. vet. Disinfect.* Moscow, 1951. pp. 121-134. [In Russian.] **1312**

A description of the properties of D.D.T. and benzene hexachloride and of numerous tests by various Russian authors of their effect on farm animals and as insecticides. Trials are continuing.—F. A. ABBEY.

WILKINSON, P. R. (1955). **Observations on infestations of undipped cattle of British breeds with the cattle tick,** *Boophilus microplus* **(Canestrini).** — *Aust. J. agric. Res.* **6,** 655-665. **1313**

These observations were made at Rockhampton, Queensland. Waves of larval ticks occurred in September - October and November - December. Although the larvae were more numerous in the latter wave they gave rise to fewer adults. There were widely differing numbers of ticks on animals, and susceptibility to infestation was not related to skin thickness or coat length. The "tick resistance" of one animal could be accounted for only by mortality of larvae and nymphs on the animal. Some animals suffered from "tick-worry" in October but recovered without treatment.—M. D. MURRAY.

HITCHCOCK, L. F. & ROULSTON, W. J. (1955). **Arsenic resistance in a strain of cattle tick** *Boophilus microplus* **(Canestrini) from northern New South Wales.**—*Aust. J. agric. Res.* **6,** 666-671. [Authors' summary modified.] **1314**

The concentration of arsenic required to prevent 50% of engorged female ticks of a strain which had proved impossible to control by dipping in 0·2% As_2O_3 from laying viable eggs was found to be approx. double that for females of a reference strain. The median lethal conc. of arsenic for larvae of this strain was also approx. double that for larvae of the reference strain.

HITCHCOCK, L. F. (1955). **Studies of the non-parasitic stages on the cattle tick,** *Boophilus microplus* **(Canestrini) (Acarina: Ixodidae).** —*Aust. J. Zool.* **3,** 295-311. [Author's summary modified.] **1315**

An account of lab. studies of the effects of temperature and relative humidity on the non-parasitic stages of *B. microplus*. The pre-oviposition period ranged from 19 – 39 days at 59° to 60°F. to 2–3 days at 97°F. The duration of oviposition was uninfluenced by R.H. but varied with the temp.

The number of eggs laid by a female tick was uninfluenced by R.H. The peak oviposition mean of 2,496 eggs per female occurred at 75°F., fewer eggs being laid at higher and lower temp. Daily egg output attained a max. of 197 at 92°F. The water loss of engorged femal ticks was greatly affected by inert dusts and even dusting with a sample of soil chosen at random produced a significant increase in water loss. Developmental period was uninfluenced by order of deposition, but percentage hatch of eggs laid during the last few days of oviposition is lower. Eggs did not hatch at constant R.H. lower than 70%, but some were able to survive R.H. lower than this if exposed periodically to a saturated atmosphere. The period of development of eggs varied from a max. of 146 days at 62°F. to a minimum of 14 days at 97°F. Max. hatch occurred between 85° and 95°F., and at R.H. above 95%. Exposure of eggs to temp. below the developmental zero prolonged the period of development merely by the period of exposure. Regular alternation of temp. between the limiting temp. of 59° and 97°F. with a steady rise or fall between the extremes resulted in development at a rate approx. equal to that obtained at constant temp. of 78°F., the arithmetic mean of the above figures. Larval

longevity was influenced markedly by temp. and humidity. A max. of 240 days was recorded at 72°F. and 90% R.H. Larvae are able to recoup water losses sustained at low R.H. by absorption from the atmosphere during subsequent periods of high R.H.

ORLOV, E. I., DAVYDOVA, M. V. & STRUKOVA, G. N. (1954). **[Ixodid ticks on the udder of cows.]** — *Rep. Ist Soviet Conf. vet. Derm.* Moscow, 1954. pp. 108-109. [In Russian.] **1316**

The authors observed ticks, mainly *Dermacentor marginatus* but also *Rhipicephalus pumilio*, on the udders of cows during the summer months in the Lower Volga and western Kazakhstan. Massive infestation resulted in multiple purulent wounds, with eventual loss of areas of the skin of the udder. Preventive measures included smearing the udder with sunflower oil, and change of pasture; pastures should be ploughed and resown once every 3 years.—F. A. ABBEY.

POLYAKOV, D. K. (1954). **[Study of demodectic mange in cattle.]**—*Rep. Ist Soviet Conf. vet. Derm.* Moscow, 1954. pp. 123-126. [In Russian.] **1317**

Demodectic mange exists in cattle in many parts of the U.S.S.R. Out of 2,322 hides examined, typical lesions were found in 1,220, and *Demodex bovis* was identified in 120. The disease was present in 160 out of 646 cattle examined.—F. A. ABBEY.

POLYAKOV, D. K. (1954). **[Demodectic mange in goats.]**—*Rep. Ist Soviet Conf. vet. Derm.* Moscow, 1954. pp. 141-143. [In Russian.] **1318**

Demodectic mange occurs in goat skins imported into Moscow from China and the central Asian republics of the U.S.S.R. Out of 100 raw skins from adult goats examined, 33 were found to be affected. In one skin there were 57 colonies of *Demodex*. One colony contained 5,697 parasites in various stages of development.—F. A. ABBEY.

See also abstr. **1291** (disease agents recovered from ticks); **1331** (mosquito vectors of Onchocerca); **1472** (report, Australia); **1475** (book, mosquitoes).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

WILLMOTT, S. & PESTER, F. R. N. (1955). **The discovery of *Paramphistomum hiberniae* Willmott, 1950 and its intermediate host in the Channel Islands.** — *J. Helminth.* **29**, 1-2. **1319**

The snail, *Planorbis leucostoma* was found to be a natural intermediate host for the fluke in the Channel Islands.—D. POYNTER.

MAGATH, T. B. & THOMPSON, J. H. JR. (1955). **The effect of irradiation of *Trichinella spiralis* on immunity and its public health implication.**—*Amer. J. trop. Med. Hyg.* **4**, 941-946. [Authors' conclusions modified.] **1320**

It was demonstrated that feeding rats 500 larvae of *T. spiralis* which have been irradiated with 30,000 r does not confer a demonstrable immunity against a challenging dose of 5,000 larvae a month later. Control rats, fed 500 normal larvae, are completely protected.

It is possible that if pork were commercially irradiated as a means of protecting human beings and pigs from infection, any immunity acquired from subclinical infections would gradually be lost. Until a specific cure for the disease is found, irradiation of pork is not recommended.

SAWADA, T., SANO, M. & UENO, T. (1954). **Studies on the development of ancylostoma larvae in chicken embryo.**—*Gunma J. med. Sci.* **3**, 21-28. [In English.] **1321**

Larvae, hatched from ova incubated at 30°C. for 12 days, were washed in saline, treated with antibiotics and injected either into the yolk sac or the allantois of chick embryos 6 and 10 days old, respectively. *A. caninum* larvae were treated with dog serum and lung suspension in saline before injection and *A. duodenale* with human serum. There was better growth in the allantois than in the yolk sac and development of *A. duodenale* was better than that of *A. caninum*.—E.G.

I. GHARIB, H. M. (1955). **Some observations on the transmission of bacteria by infective larvae of *Nippostrongylus brasiliensis*.**—*J. Helminth.* **29**, 27-32. **1322**

II. GHARIB, H. M. (1955). **Observations on skin penetration by the infective larvae of *Nippostrongylus brasiliensis*.** — *Ibid.* 33-36. **1323**

I. Bacteria and larvae were applied to the skin of rats and mice. Subsequently the bacteria were recovered from s/c tissue where they had apparently been introduced by the larvae.

II. G. concluded that larvae may penetrate the skin of mice within 5 min. and that half an hour is sufficient for some of them to

reach the lungs. Larvae may enter by hair follicles or directly *via* the stratum corneum.
—D. Poynter.

Jarrett, W. F. H., McIntyre, W. I. M., Urquhart, G. M. & Bell, E. J. (1955). **Some factors in the epidemiology of parasitic bronchitis in cattle.**—*Vet. Rec.* **67,** 820-824. [Authors' summary modified.] **1324**

Evidence was presented to show that the larvae of *Dictyocaulus* may survive and remain infective for one year on pasture in west Scotland. The occurrence of carriers of the disease was demonstrated and their numerical and approx. age incidence given.

Enigk, K. (1955). Weitere Untersuchungen zur Aerosoltherapie des Lungenwurmbefalles der Wiederkäuer. **[Further investigations into aerosol therapy of lungworm infection in ruminants.]**—*Dtsch. tierärztl. Wschr.* **62,** 489-493. **1325**

Aerosol therapy for *Dictyocaulus* infections in ruminants was stated to yield satisfactory results. The drug "ascaridol" is applied for 15–20 min. by means of a breathing bag and compressed air. The number of treatments required depended on the severity of the disease, early cases needing only one. The method was unsatisfactory against *Protostrongylus* infections in sheep.
—E. J. L. Soulsby.

Das, K. M. & Singh, G. B. (1955). **Calf ascariasis in India. A nine years' survey with special reference to "hetrazan".**—*Brit. vet. J.* **111,** 342-347. [Authors' summary modified.] **1326**

Observations on ascariasis in cow and buffalo calves have been made over 9 years. These included 168 P.M. examinations and 197 treatments with the following:— tetrachlorethylene and magnesium sulphate, tetrachlorethylene with 1 : 8 dihydroxanthraquinone, tetrachlorethylene with liquid paraffin, pods of *Scandipsus indica,* and diethylcarbamazine acid citrate ("hetrazan"), the last-named giving the best results (96% success). Trials with toluene, hexylresorcinol and 6-*tert*-butyl-*m*-cresol are envisaged. Widespread prenatal infestation in buffalo calves has been observed, although dams have not shown clinical intestinal ascariasis.

Lebduška, J., Šimůnek, J. & Černohous, J. (1955). Studium použitelnosti fluorokřemičitanu sodného v léčbě askaridosy prasat. **[Sodium fluorosilicate as an anthelmintic against ascarids in pigs.]**—*Sborn. čes. Akad. zemědělsk. Věd, Živoč. Výr.* **28,** 405-422. [In Czech. German and Russian summaries.] **1327**

Sodium fluorosilicate, although highly effective *in vitro,* was inferior to sodium fluoride as an anthelmintic against *Ascaris* in pigs.—E.G.

Borchert, A. & Kalbe, I. (1955). Über die Widerstandsfähigkeit der Eier von Ascaris lumbricoides L. bei der natürlichen Kompostierung. **[Resistance of eggs of *A. lumbricoides* in composted sewage.]**—*Arch. exp. VetMed.* **9,** 142-144. **1328**

Eggs of *A. lumbricoides* were destroyed in composted sewage within 4–10 days. Figures for 3 compost heaps revealed that a max. temp. of 45° to 60°C. was reached within 4–6 days after construction of the heap.
—M. L. Clarke.

Cavier, R. & Gaulin, J. (1955). Un nouvel anthelminthique: le dilaurate de diéthylènediamine. **[A new anthelmintic: diethylenediamine dilaurate.]** — *Bull. Soc. Pat. exot.* **48,** 393-396. **1329**

Of 30 cases of human oxyuriasis given diethylene-diamine dilaurate *per os* or *per rectum,* 28 were cured after a single dose, and 6 of 10 cases of *Ascaris* infestation recovered, 3 of these requiring only one dose. The drug was well tolerated even by young children.
—M. L. Clarke.

Pouplard, L. & Fievez, L. (1955). Essai de traitement de l'Ascaridiose et de la Capillariose du pigeon par l'adipate de pipérazine. **[Treatment of *Ascaridia* and *Capillaria* infestation in pigeons with piperazine adipate.]**—*Ann. Méd. vét.* **99,** 147-159. **1330**

Piperazine adipate was used to treat 26 pigeons for infestation with *A. columbae* and *C. columbae* with a dose of 0·3 g. given to the unfed birds each morning for 3 consecutive days. Later 23 of the birds were dosed for 6 consecutive days. No toxic symptoms were noted. The results were assessed on the faecal egg counts made by the McMaster technique at intervals before and after treatment. After the first treatment ascaridia eggs were reduced by 98·6% and capillaria eggs by 91·9%. Following the second treatment there was no further reduction of the ascaridia egg count, but there was a reduction of 98·25% in that of capillaria. No correlation could be made of clin. symptoms and faecal counts of ascaridia eggs or coccidial oocysts, but counts of capillaria eggs over 4,000 per g. were invariably accompanied by marked symptoms.—W. E. Parish.

MOLEV, E. V. (1954). **[Ecology of mosquito vectors of *Onchocerca* in horses.]**—*Rep. Ist Soviet Conf. vet. Derm.* Moscow, 1954. pp. 205-209. [In Russian.] **1331**

M. studied the life-cycles and habits of 14 species of *Culicoides* prevalent in the Moscow and Ivanov regions; the commonest was *C. pulicaris*. Microfilariae very similar to those of *Onchocerca* were recovered from *C. obsoletus* and *C. stigma*, representing 1·15% infected out of all the mosquitoes of all species examined. *Onchocerca* infestation in horses was observed at 11 places in the area examined. Horses aged 5–10 years were most commonly affected, and chestnuts and greys were more often affected than horses of other colours. The control of mosquitoes by drainage of land was recommended.—F. A. ABBEY.

NORMAN, L. & DONALDSON, A. W. (1955). **Spores of helicosporous fungi resembling microfilariae in blood films.**—*Amer. J. trop. Med. Hyg.* **4**, 889-893. [Authors' summary copied *verbatim*.] **1332**

Structures which superficially resembled microfilariae were found on blood films and in other types of clinical material. These organisms, however, apparently are airborne spores of helicosporous fungi and represent contaminants on the blood films. It is believed that these objects have been mistakenly identified by other workers as microfilariae or as other species of worms.

SOLIMAN, K. N. (1955). **Observations on some helminth parasites from ducks in southern England.**—*J. Helminth.* **29**, 17-26. **1333**

Thirteen different species of helminth parasites (4 trematodes, 5 cestodes, 3 nematodes and 1 *Acanthocephala*) were found in 18 ducks. S. recorded *Hymenolepis collaris*, *Trichostrongylus tenuis* and *Filicollis anatis*, not previously reported from domestic ducks in Britain and *H. anatina* and *H. abortiva*, not previously recorded in England. Cysticercoids of *H. parvula* were found in the mesenchyme of the leech, *Erpobdella octoculata*. He discussed the probability that this leech acts as the second intermediate host for *Cotylurus cornutus*.—D. POYNTER.

STEWARD, J. S. (1955). **Anthelmintic studies: I. A controlled critical entero-nemacidal test. II. A double entero-nemacidal anthelmintic test covering a wide range of activities. III. A taeniacidal testing technique. IV. The loss of efficiency by division of the dose.**—*Parasitology*. **45**, 231-241; 242-254; 255-265 & 266-268. **1334**

I. *Heterakis spumosa* in rats was used as a test organism for anthelmintics active against *Enterobius* in man and certain helminth infections in herbivorous animals.

II. S. demonstrated how two nematode infections in the rat which respond to the anthelmintics which act on a wide range of gastro-intestinal nematodes can be used as a routine screening test for anthelmintics or for the study of variations in the degree of activity caused by alterations, formulation or presentation.

III. An account of a taeniacidal technique using mice artificially infected with *Hymenolepis nana* var. *fraterna*. Interpretation is based on the number and sizes of worms left in the treated animals as well as the proportion of mice rendered negative by treatment.

IV. In mice phenothiazine in a single large dose is more effective than a similar divided dose.—D. POYNTER.

See also abstr. **1262** (swine lungworms as influenza virus reservoir); **1477** (parasitism).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

MAKARI, J. G. (1955). **Use of Schultz-Dale test for detection of specific antigen in sera of patients with carcinoma.**—*Brit. med. J.* Nov. 26th, 1291-1295. [Author's summary modified.] **1335**

The detection is described of a specific soluble antigen in the sera of carcinoma patients, by use of the Schultz-Dale test on actively or passively sensitized uterine horns. Under the best conditions yet found—*i.e.*, when the serum or plasma is used fresh or after storage at −40°C., when platelet-intact or platelet-free plasma is used, and when the sensitizing antigen is of small particle size—this test shows a high degree of specificity and sensitivity, being positive in 96·8% of carcinoma cases, in 4·8% of other diseases, and in 4 to 5% of cases from the Cancer Detection Clinic.

Further work is in progress to help stand-

ardize this test and to show if it can be used on a larger scale as an early diagnostic aid in individual cases and in the screening of carcinoma in the general population.

Götze, R., Rosenberger, G. & Ziegenhagen, G. (1955). Über Ursachen und Bekämpfung der Rinderleukose. II. Weitere Bemerkungen zur Diagnose und zur Erblichkeit. **[Aetiology and control of bovine leucosis. II. Further observations on diagnosis and hereditability.]**—*Dtsch. tierärztl. Wschr.* **62,** 353-357. **1336**

An account of the value of white cell counts in detection of cases of bovine leucosis in infected herds. In 10 infected herds over a number of years about 500 head were classed as positive or doubtful. During this time 54 clinical cases with tumour formation occurred, all from the group that had given positive or doubtful results to the test.—M.G.G.

Pallaske, G. (1955). Zur Leukose der Fleischfresser. **[Leucosis in dogs and cats.]** —*Berl. Münch. tierärztl. Wschr.* **68,** 330-334. [English summary.] **1337**

Clinical and pathological details are given of 10 cases (5 canine, 5 feline) of lymphatic (stem cell) leucosis.—E. Cotchin.

Hofferber, O. (1955). Weitere Beobachtungen über die Behandlung der Lymphadenose des Rindes mit Triamelin (TEM). **[Further observations on the treatment of bovine lymphadenosis with triethylenemelamine.]** — *Dtsch. tierärztl. Wschr.* **62,** 420-421. **1338**

H. comments on the apparently favourable effects on bovine lymphadenosis, as shown by the blood picture and reduction of neoplastic swellings, of intravenously-administered T.E.M., in combination with trace elements (Cu, Ni, Co, Mg, Mn, Zn), minerals (Ca, P) and vitamins (A, C, D). Untoward effects, which can be avoided, are described—loss of appetite, diarrhoea, haemorrhages, agranulocytosis (controlled by administration of folic acid).—E. Cotchin.

Ishitani, R., Sugawa, Y., Horiuchi, T., Shibata, D. & Takahashi, I. (1955). **[Studies on the avian leucosis complex. I. Occurrence in the Tokyo district, Japan.]** — *Exp. Rep. Govt exp. Sta. Anim. Hyg., Japan.* No. 29, pp. 1-6. [In Japanese.] pp. 7-18. [In English.] **1339**

A general discussion of the avian leucosis complex and an account (supported by tables) of the results of examination of 353 sick fowls which had died or been killed *in extremis.* Avian leucosis complex was diagnosed in 66 and was classified, according to the type of cell involved, as follows:— Lymphomatosis, 44 (of which 9 were of the visceral type); Erythroleucosis, 14; Myeloleucosis, 1; mixed (erythroleucosis and myeloleucosis), 2.

—T.E.G.R.

Arroyo y Martin, C. (1955). Las encefalitis producidas por virus. La microglia y sus alteraciones en las formas ocular y paralítica de la leucosis en la gallina. **[Microglia lesions in neural and ocular lymphomatosis in fowls.]** —*Rev. Patron. Biol. anim.* **1,** 277-288. **1340**

Microglial lesions occur in the ocular, and less often in the paralytic forms of avian lymphomatosis. The altered cells, seen in the cerebrum, cerebellum and bulb, lie around the medium and small vessels and the capillaries, either as foci, or dispersed throughout the white and grey matter. At the beginning there is an increase in the number of the cells, which enlarge, and their dendrites proliferate and swell up, giving a varicose appearance, before finally being reduced to detritus.

—I. W. Jennings.

NUTRITIONAL AND METABOLIC DISORDERS

Itikawa, O., Yonemura, T., Ogura, Y. & Sugawa, A. (1955). **Studies on nutritional disorder following the starvation of domestic animals, (first report) especially on the cytochemical changes of the dehydrogenases.** — *Exp. Rep. Govt exp. Sta. Anim. Hyg., Japan.* No. 29, pp. 371-385. [In Japanese.] pp. 386-399. [In English.] **1341**

Comparative studies were made of heart, skeletal muscle, liver, kidney and adrenal gland of normal and of starved goats. Low enzyme activity was noticed in the tissue of the starved goats. In addition there was cloudy swelling and oedema in the liver and in the kidney, which also showed a certain amount of atrophy.—T.E.G.R.

Self, H. L., Grummer, R. H. & Casida, L. E. (1955). **The effects of various sequences of full and limited feeding on the reproductive phenomena in Chester White and Poland China gilts.**—*J. Anim. Sci.* **14,** 573-592. **1342**

The low ration scale was two-thirds of the full, and animals were switched from one

to the other as between pre-puberty, the first cycle, and from service at 2nd heat to 25th day of gestation. Fertilization rate was unaffected by the diet, but gilts on full diet throughout had 32% embryo survival and an average of 3·89 embryos as contrasted with 57% and 6·4 in those on low diet throughout. Full-fed gilts throughout produced 14 ova; gilts low-fed throughout produced 11.

—F. L. M. Dawson.

Teague, H. S. (1955). **The influence of alfalfa on ovulation rate and other reproductive phenomena in gilts.**—*J. Anim. Sci.* **14**, 621-627. **1343**

In 4 experiments in feeding pens, the conception rate of gilts fed a diet containing 18% sun-cured alfalfa (lucerne) was not noticeably different from that of gilts fed a well supplemented legume-free diet, but they gave birth to a significantly greater number of live piglets and a higher percentage of these survived to weaning age. When examined early in gestation, they possessed a greater number of corpora lutea than the animals on the legume-free diet.—A. Ackroyd.

Crookshank, H. R. & Sims, F. H. (1955). **Serum values in wheat pasture poisoning cases.**—*J. Anim. Sci.* **14**, 964-969. [Authors' summary slightly modified.] **1344**

The composition of the blood serum of normal cows was compared with that of cows affected with wheat pasture poisoning. The data revealed a decrease in inorganic phosphate, total and diffusible calcium, magnesium, and the albumin-globulin ratio, whilst the total serum protein, globulin, and possibly the potassium levels increased. The wide range of values observed suggests that the blood serum findings could be the effect of wheat pasture poisoning rather than the cause.

Hungate, R. E., Fletcher, D. W. & Dyer, I. A. (1955). **Effects of chlortetracycline feeding on bovine rumen microorganisms.**—*J. Anim. Sci.* **14**, 997-1002. [Authors' summary and conclusions modified.] **1345**

Manometric readings were made to measure the total fermentation products of rumen contents from chlortetracycline-fed and control animals, both in the presence and absence of additional chlortetracycline. Inhibition by added antibiotic was greater in the control animals, indicating that chlortetracycline feeding had altered the composition of the rumen microbial population. Methane production was diminished by the added chlortetracycline, but this was probably a secondary result from inhibition of the production of the intermediates, hydrogen and formate. The potential for microbial activity in the rumen contents of chlortetracycline-fed steers was similar to that of the controls. The rumen micro-organisms appeared to be somewhat more sensitive to chlortetracycline than to streptomycin.

Pritchard, G. I., Riddell, W. H. & Durrell, W. B. (1955). **The effect of different levels of dietary oxytetracycline on the growth of young dairy calves.**—*J. Anim. Sci.* **14**, 1011-1014. [Authors' summary modified.] **1346**

Oxytetracycline in the food of dairy calves at the rate of 15 or 60 mg./100 lb. body wt. did not cause a significant difference in rate of gain between the two levels of feeding. Furthermore, there was an insignificant increase in gain over the controls. This poor growth response was probably due to a reduction or elimination of certain low-grade pathogens in the calf herd as a result of the continuous feeding of antibiotics to most calves during the previous two years.

Jones, J. D. & Baumann, C. A. (1955). **Relative effectiveness of antibiotics in rats given limiting B vitamins by mouth or by injection.**—*J. Nutr.* **57**, 61-71. [Authors' summary modified.] **1347**

Inadequate amounts of thiamine, riboflavin and pantothenic acid were administered to rats either in the diet or by s/c injection, and the effectiveness of dietary antibiotics on growth was observed. Penicillin and aureomycin consistently increased growth under both conditions, but the increase was usually greater when the inadequate vitamin B was in the diet than when it was injected. The results suggest that the antibiotics stimulate an increased intestinal synthesis of these vitamins, but do not show if this is the only process involved. Streptomycin was relatively ineffective in diets containing inadequate amounts of these vitamins, but it seemed to improve the effectiveness of the injected vitamins.

I. Coates, M. E., Davies, M. K., Harrison, G. F., Kon, S. K. & Porter, J. W. G. (1955). **The mode of action of antibiotics in chick nutrition. II. The effect of penicillin in clean and stale premises.**—*J. Sci. Fd Agric.* **6**, 419-421. [Authors' summary slightly modified.] **1348**

II. Coates, M. E. & Porter, J. W. G. (1955). **The mode of action of antibiotics in chick**

nutrition. III. The nature of the 'infection' counteracted by penicillin. — *Ibid.* 422-425. [Authors' summary copied *verbatim.*] **1349**

I. Premises where chick growth had been suboptimal without penicillin in the diet were cleaned and disinfected. The first batches of chicks reared there after the disinfection grew well without penicillin, but growth deteriorated in subsequent batches and finally became indistinguishable from that in 'stale' premises. In field units that had previously housed other chicks, growth of new chicks was depressed in the absence of penicillin. In new field units on fresh ground chicks grew as well without as with the antibiotic, but two further batches of chicks made a small increase in weight with penicillin even though the units had been disinfected and moved to fresh land.

II. Isolation units were designed for the study with chicks of the growth-depressing 'infection' counteracted by penicillin. Preliminary results indicated that the 'infection' could be transmitted by feeding gut contents from 'infected' chicks to newly-hatched chicks. It was not transmitted by similar gut contents after autoclaving or by gut contents from 'uninfected' chicks.

AMANDIN, (FRÈRE). & HÉRIN, V. (1955). Essai de supplémentation sur des poussins Leghorn, à l'aide du Coopers penicilline feed supplement nr 5. **[Experiment on the feeding of penicillin supplement to Leghorn chicks.]**— *Bull. agric. Congo belge.* **46,** 843-852. [Flemish summary.] **1350**

The addition of procaine penicillin G (2·5 mg. per kg. of food) to the rations of growing chickens had a markedly beneficial effect both on the rate of growth and weight increase. Histological examination showed that the antibiotic protected the chickens from a chronic infection of the small intestine which was present in the control chicks.

—J. A. NICHOLSON.

SCHARPENSEEL, H. W. (1955). Über einige neue Probiotika und Antibiotika in der Geflügelernährung. **[A new antibiotic from *Tropaeolum maius* ("tromalyt") in the nutrition of fowls.]** — *Arch. Geflügelk.* **19,** 380-384. **1351**

An antibiotic "tromalyt", obtained from the flowering plant *Tropaeolum maius* was found to be superior to "aurofac" (aureomycin residue) in inducing weight increase in chickens upwards of 3 weeks old. Similar results were obtained with *Cassia sophera,* another flowering plant which is greedily consumed by animals because of its sweet taste. As little as 10–20 mg. of papain was shown to produce optimal stimulation of growth when fed to animals. It is suggested that this may be due to improved digestion of proteins.

"Tromalyt" protected an experimental group of fowls from severe symptoms when they became accidentally infected with fowl pox virus; the control groups succumbed.

—W. G. SILLER.

REBER, E. F. (1955). **The effect of antibiotics upon the motility of isolated intestinal sections of rabbits and swine.**—*Amer. J. vet. Res.* **16,** 553-557. **1352**

The *in vitro* motility of intestinal muscle of rabbits and pigs was decreased by procaine penicillin and procaine hydrochloride, remained almost unaffected by potassium penicillin, was decreased by chlortetracycline and dihydrostreptomycin and hardly affected at all by bacitracin.—G. P. MARSHALL.

LUCAS, I. A. M. & CALDER, A. F. C. (1955). **Thyroxine, stilboestrol and antibiotics in rations for castrated male pigs.**—*Brit. J. Nutr.* **9,** 267-279. **1353**

Pigs receiving only hormones grew 6% faster and 4% more efficiently than controls, and pigs receiving antibiotics 15% faster and 8% more efficiently than controls. The addition of hormones to a diet already containing an antibiotic reduced growth rate by 8% and food conversion efficiency by 8% during the "growing period" (40–100 lb. live wt.). During the "finishing period" (100–200 lb. live wt.), hormones added to the diet containing aureomycin had no effect, but when added to the diet containing penicillin they increased growth rate by 6% and food conversion efficiency by 8%. Differences in carcass-quality measurements were not significant.—M.G.G.

BLAXTER, K. L. (1955). **Problems associated with feeding of whole milk.**—*Rep. Proc. Conf. Feed. farm Anim. Hlth Prod.* London, 1954. pp. 38-43. Discussion: pp. 43-52. (B.V.A. Publ. No. 24.) **1354**

B. summarized the diagnosis, cause and prevention of hypomagnesaemic tetany in calves. Particular attention was paid to Ca : Mg ratios in bones; values of 48 to 70 : 1 represent normality whilst those above 80 : 1 must be regarded with suspicion.

—D. POYNTER.

MILNE, F. N. J. (1955). **Studies on condensed whale solubles in chick starter rations.**—*Qd. J. agric. Sci.* **12**, 21-31. [Author's summary modified.] **1355**

Batches of condensed whale solubles (c.w.s.) from two sources were used partly or wholly to replace meat meal in chick starter rations. High mortality, many cases of dermatosis and depressed growth rate occurred when a batch of c.w.s. that had been stored for at least 18 months was used as a sole source of protein. Even at the lowest level of c.w.s. (8%) used in combination with meat meal (8%), the number of cases of dermatosis was highly significant and growth rate was reduced. When c.w.s. of a later date of manufacture was used, dermatosis and reduced growth rate occurred in the groups fed this product either alone or in conjunction with meat meal. The addition of liver meal (a source of the vitamin B complex) at the rate of 4% in a chick mash containing 14% c.w.s. acted as a corrective. It would appear that c.w.s. is deficient in one or more members of the vitamin B complex, particularly biotin. There is evidence that rancidity of the fat content of c.w.s. may increase with storage and that such rancidity may inactivate biotin in feed mixtures.

KING, J. T., CHIUNG, PUH LEE, Y. & VISSCHER, M. B. (1955). **Heart failure in mice related to minerals in the diet.**—*J. Nutr.* **57**, 111-120. **1356**

C_3H strain mice regularly developed heart failure late in life when fed a basal diet with a salt mixture plus traces of Co, Zn, Mn and relatively large amounts of I. The disorder did not occur when the diet was fed with a salt mixture lacking the above trace elements, nor when a commercial diet was fed. It was tentatively suggested that the heart failure was due to a tocopherol deficiency determined by the salt mixture used.—D. POYNTER.

DALE, F. H. (1955). **The role of calcium in reproduction of the ring-necked pheasant.**—*J. Wildlife Mgmt.* **19**, 325-331. [Abst. from author's summary.] **1357**

In Lancaster County, Pennsylvania, no environmental difference other than presence or absence of limestone was discovered that might explain the uneven distribution of pheasants. Egg production of experimental pheasants was good when birds were given limestone grit, but poor when granite grit was supplied. Birds receiving granite grit had apparently normal eggs in the ovary but laid very few eggs. A supplement of powdered calcium carbonate in their diet increased egg production. The precise role of calcium in permitting ovulation was not investigated.

It was concluded that Ca in the natural pheasant diet must be supplemented in some way to permit pheasants to reproduce. Scarcity of calcium may well explain the failure of the pheasant in many parts of North America.

MACHADO, A. V. (1953). Alterações do quadro eritrocitico na anemia nutricional dos leitões observadas em diferentes raças. **[Changes in the erythrocyte count in nutritional anaemia of piglets of different breeds.]**—*Arch. Esc. Vet. Minas Gerais.* **6**, 1-74. **1358**

The red blood picture was studied for 84 days in 209 piglets of 6 breeds, which were divided into two groups, kept in concrete and earth floored pens, respectively. The factors under investigation included: Hb values, number of r.b.c. and reticulocytes, absolute and average cell volume, colour index, and the mortality rate. The animals, whether anaemic or not, showed considerable variations in these values. In European (larger) breeds the degree of anaemia was higher than in indigenous breeds.

The mortality rates were 12·7% in concrete pens and 2% in earth pens; it was concluded that the use of concrete pens for rearing piglets is inadvisable at least during the first 5 weeks of life.

The cell volume appeared to be of greater diagnostic value than the number of cells. The reticulocyte counts showed roughly the same trend in each group, reaching an av. of 14% on the 21st day, and falling thereafter. The pathological changes found in anaemic animals were described.—G. P. MARSHALL.

MAHONEY, J. P., BUSH, J. A., GUBLER, C. J., MORETZ, W. H., CARTWRIGHT, G. E. & WINTROBE, M. M. (1955). **Studies on copper metabolism. XV. The excretion of copper by animals.** — *J. Lab. clin. Med.* **46**, 702-708. [Authors' summary modified.] **1359**

The relative importance of the liver, kidney, and intestinal wall in the excretion of copper was investigated by the use of radiocopper in dogs. Approx. 0·6% of the administered activity was excreted in the urine, about 1·5% passed directly through the intestinal wall, and about 7 to 10% was excreted into the bile. When the biliary route was obstructed, the excretion of copper through the kidney and intestinal wall increased.

I/v administration of a large amount of

non-radioactive copper daily for 32 days was associated with an increase in the excretion of copper in the urine of a dog with the bile duct ligated, but not in the urine of a normal dog. Ligation of the bile duct in 6 dogs and in 4 pigs did not raise the plasma copper level even when large amounts of copper were given orally or i/v for periods varying from 34 to 45 days. It was concluded that the capacity of dogs and pigs to excrete copper is limited. Copper is excreted mainly in the bile, and to a small extent through the kidneys and intestinal wall.

ANDERSON, B. M. & PARKER, H. E. (1955). **The effects of dietary manganese and thiamine levels on growth rate and manganese concentration in tissues of rats**—*J. Nutr.* **57,** 55-59. [Authors' summary modified.] **1360**

The time required to deplete rats of thiamine was not significantly altered by increasing the manganese content of the diet. The addition of either thiamine or manganese to diets deficient in both of these nutrients improved the growth rate of rats, but the addition of both did not bring about a greater improvement. The amount of manganese present in heart and liver tissue was found to vary directly with the manganese level in the diet and was not significantly affected by the level of thiamine in the diet.

ELCOATE, P. V., FISCHER, M. I., MAWSON, C. A. & MILLAR, M. L. (1955). **The effect of zinc deficiency on the male genital system.** — *J. Physiol.* **129,** No. 3, pp. 53P-54P. of Proceedings. **1361**

Nutritional Zn deficiency produced degeneration of the testes and arrested the growth of accessory genital structures in the male. To some extent these effects could be reversed by treatment with testosterone propionate or with gonadotrophin, but the role of Zn as a possible stimulator of the production of the latter hormone remained to be elucidated.—G. P. MARSHALL.

BRAUN, H. A., VAN HORNE, R., BETTINGER, J. C. & BELLET, S. (1955). **The influence of hypocalcemia induced by sodium ethylenediamine tetraacetate on the toxicity of potassium. An experimental study.**—*J. Lab. clin. Med.* **46,** 544-548. [Abst. from authors' summary.] **1362**

A technique is described for the production in dogs of moderate, sustained hypocalcaemia by the infusion of sodium ethylenediamine tetraacetate. In hypocalcaemic dogs the lethal concentration of potassium in the blood ranged from 10·0 to 13·4 milliequivalents (meq.) per litre (11·6 to 15·4 in controls), and abnormal electrocardiograms were observed at potassium levels of 7·5 to 11·7 meq. per litre (9·1 to 13·2 in controls).

WOLBACH, S. B., MADDOCK, C. L. & COHEN, J. (1955). **The hypervitaminosis-A syndrome in adrenalectomized rats. Skeletal changes in weanling rats with and without cortisone.** —*Arch. Path.* **60,** 130-135. [Authors' summary modified.] **1363**

The effects of hypervitaminosis A on the skeleton of weaned rats were accelerated by adrenalectomy, and no significant influence of cortisone on the process was evident.

MCCLYMONT, G. L. & DUNCAN, D. C. (1955). **Studies on nutrition of poultry. V. Comparative value of synthetic riboflavin and natural vitamin B complex rich feeds for supplementing wheat-meatmeal rations for hatchability.**—*Aust. vet. J.* **31,** 91-92. **1364**

Supplementation of a basal wheat and meat meal ration containing 3 p.p.m. of riboflavin and 60 p.p.m. of manganese sulphate with various foodstuffs did not significantly improve either egg production, fertility or hatchability.—L. HART.

JOHNSON, W. J. & MCCOLL, J. D. (1955). **6-Aminonicotinamide—a potent nicotinamide antagonist.**—*Science.* **122,** 834. **1365**

The toxicity of 6-aminonicotinamide, of which the LD_{50} in mice is 35 mg./kg. when injected i/p, was decreased to one eighth of that value by the simultaneous administration of 50 mg./kg. of nicotinamide.

—G. P. MARSHALL.

BERRIER, H. H., JR. (1955). **Pregnancy disease in sheep: study of prophylaxis and treatment on flock basis.**—*Vet. Med.* **50,** 206 & 209. **1366**

This paper is itself an abstract and does not specify doses nor give particulars of any control measures that may have been taken. B. considers that cortisone acetate and 11-ketoprogesterone played an important part in carrying 32 of 45 ketonuria-positive ewes safely through lambing. The total ewe stock in the flocks concerned was 123. Repeat injections proved troublesome.

—F. L. M. DAWSON.

ADLER, J. H., ROBERTS, S. J. & DYE, J. A. (1955). **The pathological physiology of ner-**

vous ketosis (A preliminary report).—*Cornell Vet.* **45,** 451-452. **1367**

A train of nervous symptoms similar to those observed in ketosis followed i/v inj., into 5 normal cows, of isopropanol—an alcohol probably produced from acetone or β-hydroxybutyric acid and found in the milk, blood and ruminal fluid of cows affected with ketosis.—T.E.G.R.

VIGUE, R. F. (1955). **Evaluation of some concepts of bovine ketosis from a practitioner's standpoint.** — *J. Amer. vet. med. Ass.* **127,** 101-119. [Author's summary modified.] **1368**

Ketosis is a seasonal disease. The nutritive ratio rather than the plane of nutrition is important. Its development depends on the degree of deficiency in relation to the stress of heavy lactation. Obesity predisposes to ketosis. No one treatment is effective in all cases. Since spontaneous remissions occur, caution is urged in evaluating any form of therapy. Hormones are beneficial, but they are not substitutes for nutrients. Hormones are not considered to be "specific" for bovine ketosis.

SPISNI, D. & MAMMOLI, R. (1955). Influenza del propionate di sodio sull'acetonemia nelle vacche da latte. **[Sodium propionate in the treatment of ketosis in cows.]** — *Gazz. vet, Milano.* No. 3, pp. 1-4. **1369**

Fourteen cows with ketosis were treated orally with 60–80 g. of sodium propionate for 3–6 days, with success; this was confirmed by the absence of ketone bodies from the urine one month after the end of the treatment.—G. P. MARSHALL.

CARDASSIS, J. (1955). Sur l'emploi du permanganate de potassium dans le traitement de l'acétose de la vache laitière. **[Potassium permanganate in the treatment of ketosis in milch cows.]**—*Rec. Méd. vét.* **131,** 564-574. **1370**

Twice daily dosage of 500 ml. of a 1 : 2,000 soln. of potassium permanganate was found to be a useful adjunct in the treatment of 30 cases of ketosis.—A. SEAMAN.

See also abst. **1472** (report, Australia)

DISEASES, GENERAL

ANON (1955). **Animal disease prevention and control.**—*Vet. Sci. News Univ. Wis.* **9,** [No pagination.] 156 pp. **1371**

The whole of this number is devoted to presenting the salient points of each of the more important disease conditions of cattle, swine, sheep and poultry in a form understandable by and useful to the farmer. This rather ambitious goal has been attained with much greater success than one would have thought possible. One page details 10 points on the general principles of disease prevention and control. Then the important diseases, internal parasites and external parasites of cattle are listed and each condition given a serial number. Swine, sheep and poultry are similarly dealt with. The rest of the book consists of an account of each of the listed diseases, one page to each disease. For each disease the information is given under the following headings:— (a) Name and synonyms, (b) Actual cause, (c) Contributing causes or factors, (d) Other species affected, (e) Signs and symptoms, (f) Means of spread, (g) Control measures, (h) Remarks, (i) References. [These are mostly to Farmers' Bulletins and Circulars and to well known text books.]

This account has been compiled at the request of extension workers in the counties of the State of Wisconsin and one has no hesitation in saying that it will be of very great value to them and to farmers.

It seems to the abstractor that there is here the germ of a very useful idea worthy of study in veterinary departments in all parts of the world.

CLARKSON, M. R. (1955). **Plans in regard to animal morbidity and mortality reporting.**—*Proc. 58th Ann. Meet. U.S. live Stk sanit. Ass.*, Omaha, 1954. pp. 281-285. **1372**

From 1942–51, the average annual losses in livestock and poultry in the U.S.A. from diseases, parasites, and insects has been estimated at $2,688,000,000. For prevention, control, and eradication a complete system of animal morbidity and mortality reporting is essential. Although reports are published by the State Livestock Sanitary Officials, the Bureau of Animal Industry and other bodies, there is no nationally co-ordinated reporting system. A committee is now being set up by the Agricultural Research Service to study from the Federal standpoint what measures can be taken towards this goal.—A. ACKROYD.

HALLORAN, P. O'C. (Compiled by.) (1955). **A**

bibliography of references to diseases of wild mammals and birds.—*Amer. J. vet. Res.* **16,** No. 61. Pt. 2. pp. 465. **1373**

The increasing interest which has been shown in recent years in the diseases of animals transmissible to man will ensure that the publication of this very comprehensive work will be welcomed. It deals with wild mammals and birds both in captivity and in the wild state and the references have been collected from a wide range of publications in the period from 1830 to 1950.

The material has been arranged on a zoological basis under the Orders of mammals and birds. Under each Order there are subheadings such as Infectious disease and parasites; diseases of skin, mucous membranes and mammae; diseases of the musculoskeletal system; and so on. In most cases these subheadings are further subdivided, for example the subheading Infectious diseases is, in the case of the Carnivora, subdivided into such heads as rabies; virus of Carré; feline panleucopenia; fox encephalitis; pasteurellosis; salmonellosis; glanders; anthrax and so on. This arrangement will meet the needs of the zoologist admirably but may not appeal so much to the veterinarian who might have preferred the emphasis to be on the disease rather than the host animal. For example if one wished to find references to the occurrence of tuberculosis in the wild boar one must first remember that the wild boar will be found under the heading Artiodactyla and that tuberculosis will be a subheading of infectious diseases. Similarly a reader wishing to find references to, say, malaria in the jungle fowl will have to look under the main heading Galliformes, subheading Infectious Diseases, sub-subheading Parasites: Metazoan and Protozoan. Having found the correct sub-subhead he will find the references listed alphabetically under the authors' names and will have to go down the list from A to Y through ten pages to pick out the references he requires. References to the diseases of rabbits, hamsters and rats have been deliberately omitted since a bibliography on the rabbit has been published by Herman, C. M. and one on the hamster is now in preparation by Magalhaes, H. The references to diseases of rats are stated to be so numerous that a separate publication would be required to list them.

In addition to references to diseases a large number of references to anatomy and anatomical anomalies and, under the heading "General and Miscellaneous", to such subjects as management, nutrition, anaesthetics etc. have been included.

The book has been printed by the photo-offset method and as a result the subheadings do not stand out so well as they would have done had they been typeset; careful scrutiny is necessary to avoid missing them in some cases.

In such a great task some defects are inevitable, but in spite of them the author has rendered a very great service to all who are interested in disease problems in wild animals and birds whether in zoos or in nature.

SELYE, H. (1955). **Stress and disease.**—*Science.* **122,** 625-631. **1374**

S. reviewed present-day knowledge of the relationships between stress and disease, and outlined the scope of this new approach to the problem of disease. He discussed changes characteristic of stress, stress response in time, pathways of stress, derangements of the adaptation syndrome, and the application of animal experiments to clin. medicine.—M.G.G.

STOL'NIKOV, V. I. (1955). **[Malignant catarrhal fever and listerellosis in cattle.]**—*Veterinariya, Moscow.* **32,** No. 9, pp. 33-38. [In Russian.] **1375**

S. stated that the clinical pictures of bovine malignant catarrh and *Erysipelothrix (Listeria) monocytogenes* infection may be sufficiently similar to cause confusion, especially in cases with nervous symptoms. In addition, mixed infection may sometimes occur. He discussed differential diagnosis, mainly based on serological tests using *E. monocytogenes* antigen, and animal inoculation.—A. MAYR-HARTING.

ANON. (1955). **Report of the committee on infectious diseases of cattle.**—*Proc. 58th Ann. Meet. U.S. live Stk sanit. Ass.*, Omaha, 1954. pp. 244-247. **1376**

During the past 8 years there have been a number of reports from various parts of the U.S.A. of diseases of cattle characterized by ulceration of the oral mucosa. One is virus diarrhoea with a low mortality and high incidence, whilst another is the "mucosal disease" complex, with a high mortality and low incidence in some herds and the reverse in others. It is not known if the aetiological agent of these conditions is the same or different. *Leptospira pomona* infection may produce abortion and weakly pigs. In cattle, there is serological evidence that infection with

leptospira normally harboured by rodents may be widespread. Bovine mastitis remains a major problem amongst cattle. Although cocci still predominate as the cause of mastitis, *L. pomona, Cryptococcus neoformans, Klebsiella pneumoniae, Pasteurella septica, Mycobacterium lacticola, Diplococcus pneumoniae* and a yeast have recently been found to cause udder infection. In only about 50% of cases can staphylococci be eradicated from an infected udder by antibiotic treatment.—A. Ackroyd.

Schipper, I. A. & Eveleth, D. F. (1955). **Mucosal disease in North Dakota.**—*Bi-m. Bull. N. Dakota agric. Exp. Sta.* **17,** 203-206. **1377**

"Mucosal disease" of cattle [see *V.B.* **24,** 3272] is widespread throughout the mid-west and is increasing in incidence.
—W. S. Marshall.

Schaaf, J. (1955). Über eine endemieartig aufgetretene Stomatitis erosiva bei Rindern. **[Endemic erosive stomatitis in cattle.]**—*Arch. exp. VetMed.* **9,** 194-201. **1378**

S. described the clinical picture, lesions and histology of a form of erosive stomatitis in 7 out of 20 cattle 9 months–3 years old, from two farms. He stated that the condition resembled hyperkeratosis. There was, however, no evidence of the use of either wood preservatives, chemical poisons or insecticides, nor were poisonous plants present on pasture, but cattle had access to stacked building materials for a new byre. Animals other than cattle were not affected.—E.G.

Flotemersch, H. J. (1955). **A new method for the clinical use of the icterus index.**—*N. Amer. Vet.* **36,** 551-555. **1379**

A more accurate measurement of bile pigments in the blood plasma of cattle is obtained after the carotenoids have been removed.
—M.G.G.

Poluikovski, M. D. & Alikaev, V. A. (1954). **[Pulmonary disease in sheep.]**—*Veterinariya, Moscow.* **31,** No. 11, pp. 39-45. [In Russian.] **1380**

Pulmonary disease accounted for 94% of all deaths of sheep in northern regions of the U.S.S.R. The incidence was highest in February and March, towards the end of the 7 months when the sheep are housed, and was attributed to bad hygiene and poor nutrition. In southern regions, pulmonary disease was commonest between June and October, under conditions of heat and drought. Lambs with pneumonia were treated with a sulphonamide given by mouth, or by penicillin given intratracheally. The authors employed X-rays to establish early diagnosis.—F. A. Abbey.

Tilga, V. V. (1955). **[Aetiology of porcine atrophic rhinitis.]** — *Veterinariya, Moscow.* **32,** No. 9, pp. 40-41. [In Russian.] **1381**

Bacteriological examination of 30 affected piglets revealed trichomonads in 18 cases. *Corynebacterium pyogenes, Pseudomonas pyocyanea* and pasteurella occurred less frequently. The role of trichomonads in atrophic rhinitis should be further examined.
—A. Mayr-Harting.

Shuman, R. D. & Earl, F. L. (1955). **Atrophic rhinitis. V. An effort to obtain atrophic rhinitis-free pigs by selection and isolation.**—*J. Amer. vet. med. Ass.* **127,** 427-429. [Authors' conclusions modified.] **1382**

Selection, by means of the rhinoscope, of weaned piglets which are negative to atrophic rhinitis offers no assurance of obtaining animals free from this disease. However, raising such selected piglets in isolated groups, segregated litters and in sanitary conditions does offer a practical means by which the disease incidence can be minimized.

Renk, W. (1955). Glomerulonephritis beim Schwein. **[Glomerulonephritis in the pig.]**—*Zbl. VetMed.* **2,** 348-358. [English, French and Spanish summaries.] **1383**

The glomerulonephritis observed in pigs with swine fever, swine erysipelas, streptococcal and other infections was of an acute serofibrinous type.—R.M.

Brooksbank, N. H. (1955). **Trembles in piglets.**—*Vet. Rec.* **67,** 576-577. [Author's summary modified.] **1384**

Out of 9 outbreaks of trembles which were investigated, swine fever virus may have been implicated in 8. It is suggested that neurotropic viruses could produce the condition provided they were of low virulence and affected the foetuses during a particular period of pregnancy.

Dahme, E. (1955). Morphologische Studien zur formalen Genese der Schrumpfniere des Hundes (chronisch-interstitielle Nephritis). **[Morphological approach to the pathogenesis of chronic interstitial nephritis in dogs.]** — *Mh. Tierheilk.* **7,** 17-35. **1385**

Chronic interstitial nephritis ("shrunken kidney") in dogs commences as interstitial lympho-histiocytic nephritis, which results in

fibrosis. Further changes in the kindey are due to non-inflammatory degeneration, with tissue contraction, resulting from a restricted blood supply caused by the fibrosis.—R.M.

THIEME, E. (1955). Hypophysen- und Nebennierenbefunde bei chronischer Nephritis des Hundes. **[The pituitary and adrenal glands in chronic nephritis in dogs.]**—*Dtsch. tierärztl. Wschr.* **62,** 362-364. **1386**

In 29 dogs with chronic nephritis the adrenals were rich in lipids and there was generally a picture of adaptation to increased activity. In the pituitary gland eosinophile cells were in the majority, whereas basophile cells were present only occasionally.—E.G.

CROFT, P. G. (1955). **Biochemistry of the cerebro-spinal fluid of the dog.**—*Vet. Rec.* **67,** 872-876. [Author's summary copied *verbatim.*] **1387**

Values for the common chemical and cytological constituents of c.s.f. of 25 normal dogs are given. These values are compared with those in a group of 17 dogs suffering from lesions of the nervous system. C.s.f. studies were also made on a group of 22 dogs hyperimmunised against distemper. The diagnostic significance of the changes is discussed.

MAGRANE, W. G. (1955). **Progressive retinal atrophy and associated blindness: breed incidence.**—*N. Amer. Vet.* **36,** 743-746. **1388**

M. observed bilateral progressive retinal atrophy, apparently hereditary, in dogs of 12 different breeds and in 3 mongrels. He discussed the role of virus infections in precipitating the onset of the condition.

—W. S. MARSHALL.

HOFFMAN, W. F. (1955). **Ischuria in cats and dogs.**—*Vet. Med.* **50,** 178 & 189. **1389**

An account of the clinical management of retention of urine, with particular reference to i/m injection of "depropanex", a deproteinated pancreatic extract which relaxes the urethral wall and facilitates passage of a catheter.—W. S. MARSHALL.

INUI, S., KAWASHIMA, H. & YAMANO, T. (1955). **[Studies on the so-called "avian infectious diarrhoea" (pullet disease—Ed. *V.B.*). Histopathological studies on the affected ovaries.]** —*Exp. Rep. Govt exp. Sta. Anim. Hyg., Japan.* No. 29, pp. 41-59. [In Japanese. Abst. from English summary.] **1390**

The macroscopic changes in the ovaries were irregularity of shape, softening of the yolk-follicle, hyperaemia of the yolk-follicle membrane and haemorrhages in the follicles. These changes were considered similar to those observed in Newcastle disease but different from those in pullorum disease.—T.E.G.R.

GERRIETS, E. (1955). Zur Ätiologie des enzootischen Herztodes der Hühner. **[Aetiology of round heart disease.]**—*Mh. VetMed.* **10,** 416-418. **1391**

The occurrence of round heart disease in a poultry establishment of about 900 hens was associated with the use of zinc food containers and pails. Ensiled, steamed potatoes contained 240 mg. of Zn per kg. Vitamin E deficiency was excluded and the farm was free from *S. pullorum* infection. After the use of zinc vessels was discontinued, occurrence of the disease ceased. It is stated that the role of Zn in the aetiology of the disease will have to be confirmed experimentally.—E.G.

LÜHRS, E. (1955). Kloakenentzündung der Hühner. **[Cloacitis in fowls.]** — *Berl. Münch. tierärztl. Wschr.* **68,** 285-287. [English summary.] **1392**

An outbreak of cloacitis in a flock of 6,000 fowls is described. The condition was found to be non-infectious and transmission experiments were unsuccessful. It responded to local treatment with a proprietary ointment [composition not given].—W. G. SILLER.

MOOS, W. S., FULLER, J. B., HENDERSON, W. J., DALLENBACH, F. & HARVEY, R. A. (1955). **Lethal effects on rats of single and multiple exposures of 400-Kv and 22-Mv X-radiation.** —*Radiation Res.* **3,** 44-51. **1393**

Irradiation of rats in single exposures showed that 22-MV betatron X-rays were only 75–80% as effective as 400-kV X-rays. In fractionated exposures of 51 r/day for 5 days a week, the lethal effectiveness of 22-MV X-rays was only 55–60% of the 400-kV X-rays. Yet calculation showed the integral dose of the 22-MV X-rays in the 2 experiments to be 106% that of the 400-kV dose.—M.G.G.

SEGAL, M. S. [Clinical Professor of Medicine, Tufts College Medical School.] & DULFANO, M. J. [Resident, Department of Inhalational Therapy, Boston City Hospital.] (1953). **Chronic pulmonary emphysema. Physiopathology and treatment.** pp. x+180. New York: Grune & Stratton, Inc. Modern Medical Monographs 8. $5.50. **1394**

This little book, written for the clinician, gives the modern theories on the causation of chronic pulmonary emphysema and details the

reasons for present-day methods of treatment. It is clear and concise and it should prove helpful for those engaged in the practice of human medicine.

This type of emphysema is rarely encountered by veterinary surgeons and the treatments discussed would not be very feasible for the larger animals.—J. R. HUDSON.

See also abstr. **1427** (diseases of reindeer); **1472** (report, Australia).

POISONS AND POISONING

WALKER, G. W. (1955). **Removal of excess fluorine from drinking water for stock.**—*E. Afr. agric. J.* **20,** 220. **1395**

Calcium chloride added to bore-hole water at the concentration of 0·54 g. per litre reduced the pH from 8·8 to 7·4, and the fluorine content from 28 to 13 p.p.m.—M.G.G.

MILLER, R. F. & PHILLIPS, P. H. (1955). **The enhancement of the toxicity of sodium fluoride in the rat by high dietary fat.**—*J. Nutr.* **56,** 447-454. [Abst. from authors' summary.] **1396**

Increasing the fat content from 5 to 15% in a purified diet containing 0·1% of sodium fluoride markedly retarded growth in rats and caused increased deposition of fluorine in the femurs. Butter fat and cottonseed oil were equally effective in enhancing the toxic action of sodium fluoride.

ANON. (1955). **Chemical industry and air and water pollution.**—*Nature, Lond.* **175,** 790-792. **1397**

At a Symposium on "The Prevention of Atmospheric and Water Pollution in the Chemical Industry", among the papers read were:— D. H. Sharp and A. E. Lambden, The treatment of waste waters from a factory making insecticides and fungicides; A. E. J. Pettet and G. C. Ware, The treatment of effluent containing cyanides; E. Wallis, The purification of waste gases in the zinc industry; K. A. Sherwin, The treatment of emissions from superphosphate works; E. Burke, Dust arrestment in the cement industry. —M.G.G.

SOMMER, A. F. & BUCHANAN, A. R. (1955). **Effects of ergot alkaloids on pregnancy and lactation in the albino rat.**—*Amer. J. Physiol.* **180,** 296-300. [Authors' summary modified.] **1398**

Ergotoxine or ergotamine injected i/p into pregnant rats (0·5 or 1·0 mg. twice daily), while not necessarily causing foetal death, did adversely affect lactation. It was found not only that total milk yield diminished, but also that the fat content declined. Animals injected with "hydergine" (a preparation containing ergot alkaloids) or methergonovine (0·5 or 1·0 mg. twice daily) failed to reveal signs of oligogalactia.

THOMAS, A. J., WATKIN, J. E., EVANS, I. A. & EVANS, W. C. (1955). **The bracken poisoning of ruminants.**—*Biochem. J.* **61,** No. 1. p. viii of Proceedings. **1399**

Experiments on sheep using water extracts of bracken fronds suggest that the factor toxic to the bone marrow of ruminants is a soluble small-molecular substance distinct from thiaminase.—J. A. NICHOLSON.

BÁLINTFFY, I. & KOVÁCS, J. (1955). Bismocillin-Intoxikation bei Saugferkeln. **[Poisoning in piglets following the injection of "bismocillin", a preparation containing procaine penicillin in oil.]**—*Acta vet, hung.* **5,** 143-147. [In German. Russian summary.] **1400**

Vomiting, anorexia, muscle tremor and sometimes diarrhoea and some deaths had been reported in unweaned piglets following i/m administration of 1-ml. doses of a brand of procaine penicillin in vegetable oil with bismuth subsalicylate and aluminium monostearate. The authors examined the effects of the various constituents of the mixture for the toxic effects in piglets. It was found that procaine was the only component which produced the symptoms and that it did so even in a dosage (96 mg./ml.) amounting to one tenth of the equivalent of procaine base contained in the preparation used. For penicillin treatment of piglets, only preparations that do not contain procaine should therefore be used.—G. P. MARSHALL.

FIEHRER, A. (1955). Les accidents sanguins et capillaires dûs au D.D.T. **[Haemolytic anaemia and capillary fragility in poisoning**

by D.D.T.]—*Rev. Path. gén. comp.* **55,** 1204-1213. [English and Spanish summaries.] **1401**

From the literature on the toxicity of D.D.T. in man it would appear that D.D.T. may produce increased haemolysis, sometimes outright haemolytic anaemia, agranulocytosis (about a week after exposure) or benign episodes of capillary fragility.

—G. P. MARSHALL.

See also abstr. **1344** (wheat pasture poisoning); **1472** (report, Australia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

STAŚKIEWICZ, G., JUSZKIEWICZ, T. & ROMANOWSKA, M. (1955). Badania nad zachowaniem się poziomu wapnia, fosforu nieorganicznego, glukozy i cholesterolu w krwi owiec po podskórnym stosowaniu leczniczych dawek czterochlorku węgla. **[Calcium, inorganic phosphorus, glucose and cholesterol blood levels in sheep following subcutaneous administration of carbon tetrachloride.]**—*Méd. vét., Varsovie.* **11,** 673-678. [In Polish. English and Russian summaries.] **1402**

In 10 sheep known to be free from liver fluke, s/c injection in winter of 2–3 ml. of CCl_4 was followed by a fall in the levels of calcium and glucose in the blood and a rise in cholesterol. The Ca level soon returned to normal, but the changes in glucose and cholesterol persisted for 8 days. The level of inorganic P was unaffected.—M. GITTER.

FORNEY, R. B., BUNDE, C. A. & BURCH, G. R. (1955). **Tissue storage in cadmium treated pigs.**—*Proc. Soc. exp. Biol., N.Y.* **90,** 13-14. [Authors' summary modified.] **1403**

The cadmium level in the liver, spleen and kidneys of pigs after administration of cadmium oxide in the food for 3 days was significantly higher than that of controls. It was lower than the levels obtained by other workers by inhalation or feeding. Higher levels have been observed in the kidneys of human beings with no history of exposure to cadmium.

ULLBERG, S. (1954). **Studies on the distribution and fate of S^{35}-labelled benzylpenicillin in the body.**—*Acta radiol., Stockh.* Suppl. No. 118. [In English. Author's summary modified.] **1404**

The culture and extraction methods used in the preparation of S^{35}-labelled benzylpenicillin were described. The technique of autoradiographic investigation was described. The histological technique was adapted to the requirements imposed by the water-solubility of penicillin and also to the desire to obtain survey pictures. Experiences of freeze-drying technique and freeze-room sectioning were discussed. A brief account was given of the technique used in quantitative measurement with a Geiger-Müller tube on dishes and on dry histological sections. The varying density of histological survey sections was investigated by quantitative beta-radiography. This investigation formed the basis for calculations of self-absorption of radiation from a section. The distribution of penicillin in various tissues and organs was described.

BÖTTIGER, L. E. (1955). **On the distribution of tetracycline in the body.** — *Antibiot. & Chemother.* **5,** 332-339. [Spanish summary p. 359. Author's summary modified.] **1405**

The distribution of tetracycline in white mice was studied by a fluorescence microscope method. Tetracycline was rapidly absorbed both after peroral and parenteral administration. It was apparently evenly distributed in the body but was accumulated in the reticuloendothelial system and in secretory organs (liver, kidney, and intestine). Tetracycline describes a circuit in the body (intestine to blood to liver to bile to intestine). It acted in these respects exactly as does oxytetracycline or chlortetracycline. The high concentration of tetracycline in the liver cells, especially after parenteral administration, is pointed out, and the possibility of damage to the liver is briefly discussed.

DIRKSEN, G. (1955). Lokalanästhesie beim Rind unter Zusatz von Hyaluronidase. **[Addition of hyaluronidase to local anaesthetics for use in cattle.]**—*Dtsch. tierärztl. Wschr.* **62,** 475-477. **1406**

The addition of 1,000 viscosity reduction units of hyaluronidase to each 100 ml. of local anaesthetic ("tutocaine") accelerated and intensified infiltration analgesia, permitted greater precision in nerve block, and shortened and intensified epidural anaesthesia. These

advantages were, however, said to be only rarely called for in large animals.

—G. P. MARSHALL.

OWEN, L. N. (1955). **Thiambutene-thiopentone anaesthesia for hysterectomy in pyometra of the bitch.**—*Vet. Rec.* **67,** 580-582. [Author's summary slightly modified.] **1407**

A method of producing anaesthesia in dogs systemically ill is described and details are given of 22 non-selected cases. Thiambutene (2 mg. per lb.) was injected i/v and followed 10 min. later by a small i/v dose of thiopentone. The duration of anaesthesia was variable but averaged 29 min.; the main advantage of this method is that recovery from the anaesthetic is rapid. No deaths attributable to anaesthesia occurred but temporary spasticity and apnoea occurred in one bitch following the thiambutene injection.

See also absts. **1102** (tetracycline in anthrax); **1103** (penicillin in anthrax); **1104** (disinfection of skins); **1120** (drug resistance of tubercle bacilli); **1133** (porcine listeriasis); **1135** (penicillin in broncho-pneumonia); **1139** (cortisone in bovine conjunctivitis); **1141** (Bact. coli mastitis); **1143** (calf paratyphoid); **1152** (furazolidone in avian salmonellosis); **1191** (fungicidin); **1193-1195** (ringworm); **1202** (antimycotics); **1204** (caprine contagious pleuro-pneumonia); **1208** (chronic respiratory disease); **1210** (ethidium bromide); **1216** (avian coccidiosis); **1218-1219** ("berenil"); **1221** (toxoplasmosis); **1264** (porcine contagious broncho-pneumonia); **1301-1303, 1306-1309** & **1311-1314** (parasiticides); **1325-1327, 1329-1330** & **1334** (anthelmintics); **1338** (bovine lymphadenosis); **1369-1370** (ketosis); **1442** (oestrogens in metritis); **1478** (dispensatory of the U.S.A.).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

SCHINCKEL, P. G. (1955). **The relationship of skin follicle development to growth rate in sheep.**—*Aust. J. agric. Res.* **6,** 308-323. [Author's summary slightly modified.] **1408**

It was found that all follicles were initiated prior to birth but that the number which finally came to maturity (production of fibre) was significantly affected by birth weight and growth from birth to 1 month. Growth at later ages appeared to be unimportant. There was a significant correlation ($r = +0{\cdot}29$) between birth weight and log potential S/P at birth. This is interpreted to indicate that while prenatal growth conditions affect the number of follicles initiated, other factors are also of considerable importance. It is concluded that the larger animals at birth also have a greater total number of primary follicles than smaller animals, and that this difference in total primary follicles results primarily from differences in size at the 90th day of pre-natal life rather than from differences in density at that time.

TANEJA, G. C. (1955). **The relative importance of heredity and environment in body weight increments at different ages in Australian Merino sheep.**—*Aust. J. agric. Res.* **6,** 343-349. [Author's summary copied *verbatim.*] **1409**

The growth rates between 5 and 11 months, and 11 and 17 months, of 284 ewe lambs born in the spring of 1951, and 269 born in the autumn of 1952, were analysed.

The growth rates were calculated as the differences between the logarithms of the successive body weights. The analysis of the data indicated that: (1) there is a negative correlation between the two growth rates due to environment in the two different periods; (2) the genetic correlation between the two growth rates is zero, and it therefore appears that there are different sets of growth genes operating during the two periods of growth; (3) the heritability for the first and second periods of growth is 0·27 and 0·31 in one group and 0·04 and 0·22 in the other respectively. Environment therefore plays a greater part in causing variation in the growth rates than does heredity.

YEATES, N. T. M. (1955). **Photoperiodicity in cattle. I. Seasonal changes in coat character and their importance in heat regulation.** — *Aust. J. agric. Res.* **6,** 891-902. [Author's summary modified.] **1410**

Studies with young Shorthorn cattle indicate that the full range of coat changes which characterize well-nourished cattle of this type may, irrespective of seasonal temperature, be reversed by artificially reversing the seasonal trend of daylight duration. This is presumptive evidence that the natural light environment is a major controlling factor in the normal pattern of seasonal coat change which cattle of European origin exhibit. Cattle with sleek, summer-type coats have shown decisive superiority of heat tolerance over those with deep, winter-type coats. Clipping tests indicate that it is the heavy coat itself which lowers heat tolerance, not a particular internal condition (of metabolism, for example) with which heavy-coatedness might be associated.

MENDEL, B. & MYERS, D. K. (1955). **Identification of pseudocholinesterase in the tissues of ruminants.** — *Nature, Lond.* **176,** 783-784. **1411**

Ox spleen and other tissues of ruminants contain enzymes capable of hydrolysing butyrylcholine but not benzoylcholine. Approx. 90% of this activity towards butyrylcholine is due to a pseudocholinesterase. The best method for the identification of cholinesterases is the use of selective cholinesterase inhibitors in combination with the substrates acetylcholine, butyrylcholine, and acetyl-β-methylcholine.—A. Ackroyd.

Dale, H. E. & Brody, S. (1954). **Environmental physiology and shelter engineering. With special reference to domestic animals. XXX. Thermal stress and acid-base balance in dairy cattle.**—*Res. Bull. Mo. agric. Exp. Sta.* No. 562, pp. 27. **1412**

In these experiments the CO_2-combining capacity, or alkali reserve, of the blood plasma of cows exposed to high environmental temperatures was studied. The terms acid-base balance, acidosis and alkalosis are defined. The techniques for use of the climatic chamber for collection of samples of blood and urine, and for determinations of blood pH and ketone bodies are described. The results indicate that cattle develop a respiratory alkalosis on exposure to environmental temperatures exceeding 85°F. The total ketone bodies in the blood plasma and the excretion of total ketone bodies in the urine did not increase with thermal stress. Starvation resulted in increased concentration in the blood and excretion in the urine of ketone bodies. It also resulted in marked changes in urinary excretion of the principal inorganic anions and cations.

Kleiber, M., Black, A. L., Brown, M. A., Luick, J., Baxter, C. F. & Tolbert, B. M. (1954). **Butyrate as a precursor of milk constituents in the intact dairy cow.**—*J. biol. Chem.* **210,** 239-247. **1413**

Injection of C^{14} labelled butyrate into the jugular vein of lactating cows showed that butyrate participates in the synthesis of carbohydrate and is more closely related to the synthesis of lactose than acetate.

—J. A. Nicholson.

Chen, T. T., Johnson, R. E., Lyons, W. R., Li Choh Hoo, & Cole, R. D. (1955). **Hormonally induced mammary growth and lactation in the absence of the thyroid.**—*Endocrinology.* **57,** 153-157. **1414**

Female rats from which the gonads, pituitary, adrenal and thyroid glands had been removed, yielded an abundance of milk following injection with oestrogen, progesterone, growth hormone, prolactin, and hydrocortisone acetate. This conflicted with earlier results, thus emphasizing that the parathyroids may play a key role. The authors admitted that their rats might have retained a proportion of parathyroid tissue.

—F. L. M. Dawson.

Edwards, E. E., Judd, J. M. & Squire, F. A. (1955). **Blood counts in domestic animals in the Gold Coast.**—*Nature, Lond.* **176,** 549-550. **1415**

R.b.c., w.b.c., packed cell volume, erythrocyte sedimentation rate, and haemoglobin determinations were made on 19 goats and 9 sheep using 181 counts on goats and 41 in sheep. The animals were West African and both dwarf and long-legged types were studied. The generally lower values of r.b.c. count and Hb as compared with other published normal values suggested a mild anaemia-producing factor in the W. African environment.—G. Fulton Roberts.

Harris, H. & Warren, F. L. (1955). **Occurrence of electrophoretically distinct haemoglobins in ruminants.**—*Biochem. J.* **60,** No. 3. p. xxix of Proceedings. **1416**

Blood samples from 72 goats were examined electrophoretically and, in some, two forms of haemoglobin were observed with differring mobilities; some animals (including all of 6 males) had only one form, the faster-moving one. In 12 pregnant sheep there were 3 variations, some having two types of haemoglobin and some with one or the other type. None of these haemoglobins was the foetal type.—G. Fulton Roberts.

Goetz, R. H. & Budtz-Olsen, O. (1955). **Scientific safari—the circulation of the giraffe.**—*S. Afr. med. J.* **29,** 773-776. **1417**

The authors studied the anatomy of the circulatory system of the giraffe, and the electrocardiograph, heart sounds, and blood pressure in the living animal. In order to capture and study a living giraffe, bullets and arrows tipped with curare were used: a dose of 200 mg. produced paralysis within 45 min. The blood pressure in the carotid artery at the base of the brain was 200 mm. Hg when the neck was in a raised position and 175 mm. Hg when it was lowered. The authors discussed the effect of the height of the animal on the circulatory system, the effect of the hydrostatic pressure of the long blood columns

in the neck on cardiac efficiency, and the effect of changes in posture on the cerebral circulation.—W. S. Marshall.

Hiepe, T. & Gürtler, H. (1955). Blutdruckmessungen an der Karotisschlinge des Pferdes. **[Measurements of arterial pressure on the carotid loop in a horse.]**—*Zbl. Vet-Med.* **2,** 550-568. [English, French and Spanish summaries.] **1418**

The authors used the indirect method of Riva-Rocci, and as criterion the auscultatory method described by Korotkov. In 50 separate measurements on a 2½-year-old horse the mean systolic pressure was 118·6 mm. Hg. The mean diastolic pressure was 82·2 mm. Hg. The mean difference was 35 mm. Hg. Psychic reactions regularly resulted in a slight rise of blood pressure whereas feeding produced variable reactions. The method might be of value for studying the action of drugs on blood pressure in the horse.—F. K. Leeb.

Hadek, R. (1955). **The secretory process in the sheep's oviduct.**—*Anat. Rec.* **121,** 187-205. **1419**

The epithelium of the oviducts of sheep was most active during oestrus and metoestrus. Its secretion consisted of an acid mucopolysaccharide.—R.M.

Aitken, R. N. C. (1955). **A histochemical study of the seminal vesicle of the sheep.**—*J. Anat., Lond.* **89,** 430-439. [Author's summary modified.] **1420**

The seminal vesicles of normal and castrated sheep were examined histochemically. Glycogen was demonstrated in the secretory cells of both. It is suggested that glycogen represents an intermediate stage in the production of fructose, and that cessation of fructose production by the seminal vesicle after castration is due to failure to convert glycogen to fructose, and not to disturbance of the glandular mechanism for converting blood glucose to glycogen. This view is supported by the finding that the amount of glycogen in the gland cells of normal animals is not reduced during the non-breeding season, although there is evidence that in sheep at this time androgen production is reduced.

The secretory cells rarely exhibited cytoplasmic basophilia in either normal or castrated animals. Lipid was present only in castrated sheep and its accumulation is apparently related to the secretion of androgens. The distribution of non-specific phosphatase (acid or alkaline) in both castrated and normal animals was described, and their possible hormonal control discussed. 5-Nucleotidase was absent from the seminal vesicles.

West, G. B. (1954). **The distribution and metabolism of adrenergic mediators.**—*Pharmacol. Rev.* **6,** 29-30. **1421**

A variety of mammalian sources yielded strong circumstantial evidence that methylation of norepinephrine to epinephrine was promoted by an enzyme derived from the cortical tissue. However, work on certain fish in which the cortical and medullary rudiments remain separate throughout life, left no doubt that methylation does not require cortical tissue. Surprisingly, there is no abnormal excretion of norepinephrine in patients affected with hypertension.

—F. L. M. Dawson.

Barone, R. & Monnet, C. (1955). Les mamelles des équidés domestiques. **[The mammary glands of domestic Equidae.]**—*Bull. Soc. Sci. vét. Lyon.* **57,** 73-92. **1422**

A detailed article on the structure of the equine mammary gland in the various functional phases (illustrated by photomicrographs), its blood vessels and lymph nodes (shown in diagrams) and its nerve supply.

—G. P. Marshall.

See also abstr **1479** (book, blood cytology); **1481** (bile pigments).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

Higginbottom, C. (1955). **The effect of menadione (2-methyl-1 : 4-naphthoquinone) on the keeping quality of milk.**—*J. Dairy Res.* **22,** 48-59. [Abst. from author's summary.] **1423**

The addition of 1 μg. menaphthone/ml. to milk had no effect on the souring of the milk at 37°C. With higher concentrations the effect varied. In some samples the clot-on-boiling stage was delayed by 1 hour with 10 μg. menaphthone and by 2 to over 5 hours in different samples containing 100 μg./ml. Some samples, however, were unaffected by as much as 1,000 μg./ml. These results appeared to be largely due to the bacterial flora of the milk. The relative insensitivity of Gram-negative rods, including coliform bacteria, and of enterococci, to menaphthone was confirmed.

Menaphthone was fed to cows at the rate

of 100 mg./day for 3 weeks. It had no effect on the keeping quality of their milk, nor on the incubation periods required for the milk to attain a titratable acidity equiv. to 2 ml. N/9-NaOH, and to become unstable to 68% alcohol and to boiling. It had no demonstrable effect on the health and milk yield of the cows, and was not detected in the milk under conditions suitable for the detection of 1 μg. menaphthone/ml. milk.

SCAIFE, J. F. (1955). **Variation of ultimate pH within pig muscles.**—*J. Sci. Fd Agric.* **6,** 467-471. [Author's summary modified.] **1424**

The muscles of cattle, sheep and pigs were examined for the effect of connective tissue, oxygen and proximity to bone upon the ultimate pH attained after death. Variations in ultimate pH values and in the distribution of total pigment may occur within individual pig muscles. The two phenomena are related; the higher the concentration of total pigment, the higher is the ultimate pH.

BARNES, E. M. & INGRAM, M. (1955). **Changes in the oxidation-reduction potential of the sterno-cephalicus muscle of the horse after death in relation to the development of bacteria.**—*J. Sci. Fd Agric.* **6,** 448-455. [Authors' summary modified.] **1425**

The oxidation-reduction potential of the sternocephalicus muscle of the horse falls after death from $E_H > +250$ mV to about -130 mV. The greatest change takes place immediately after death and is probably due to the absence of oxygen. After rigor mortis the potential remains steady, provided that bacterial growth is inhibited, which can be effected either by holding the muscle at 5° or incorporating 1–2 p.p.m. of aureomycin. If bacterial growth occurs the potential falls to about $E_H -250$ mV or lower.

—. (1955). Bactériologie des semi-conserves de viandes. I^er^ symposium international de bactériologie alimentaire organisé par la section de microbiologie de produits alimentaires de l'Association Internationale des Sociétés de Microbiologie, Institut Pasteur de Lille—10-14 octobre 1954. **[Bacteriology of preserved meats.]**—*Ann. Inst. Pasteur Lille.* **7,** 9-266. **1426**

Eighty-five scientists representing 14 countries attended. The term "semi-conserves de viandes" was defined as semi-preserved meats, *i.e.*, canned meats with limited keeping qualities such as canned hams, potted meat, sausages etc. The papers and reports (totalling 37) were mainly on the preservation and canning of hams; the conditions and processes favouring, retarding or limiting growth and virulence of pathogenic organisms; steps to avoid food poisoning among consumers and to improve the keeping qualities of the canned products.—T.E.G.R.

POLYANSKAYA, M. V. (1954). **[Thirty years of research and practical work of the veterinary station in the farthest North.]**—*Veterinariya, Moscow.* **31,** No. 11, pp. 17-23. [In Russian.] **1427**

An account of the work of the Salekhardsk Veterinary Research Station in the Obdorsk district of the Omsk region, founded in 1925 for the study of diseases of reindeer and their control. Foot rot, caused by *Fusiformis necrophorus* is an important disease of reindeer, and so is anthrax. The latter is controlled by inoculation of "STI" vaccine (a non-capsulated variant of *B. anthracis*). Other common diseases are *Babesia* infection, pneumonia of reindeer calves, and helminth and *Hypoderma* infestations.—F. A. ABBEY.

REID, J. (1955). **Transport of animals and problems arising. Rail, road and sea.**—*Vet. Rec.* **67,** 1062-1065. Discussion pp. 1065-1071. **1428**

Transit fatigue, injury to animals in transit and the danger of the spread of disease are aspects of transport of livestock which are dealt with by legislation. An outline is given of the various acts and orders and of their enforcement in Great Britain.—T.E.G.R.

See also abstr. **1144** (Salmonella in meat); **1287** (psittacosis-like organism from man and animals in the Belgian Congo); **1320** (trichinella); **1328** (survival of Ascaris eggs in sewage).

REPRODUCTION AND REPRODUCTIVE DISORDERS

HAFS, H. D. & ELLIOTT, F. I. (1955). **The effect of methods of adding egg yolk and monosaccharides on the survival of frozen bull spermatozoa.**—*J. Dairy Sci.* **38,** 811-815. **1429**

Better results were obtained for diluted semen, in terms of motility and conception rate, if the amount of egg-yolk to be incorporated in the diluent was divided into 2 equal parts, and each part added to the citrate and

the glycerol components, instead of all the yolk being added to the citrate. Similarly, fructose or glucose should be added to the glycerol or should be equally divided between the glycerol and the citrate, and not added solely to the citrate.—F. L. M. Dawson.

White, I. G. (1955). **The toxicity of heavy metals to mammalian spermatozoa.**—*Aust. J. exp. Biol. med. Sci.* **33,** 359-366. **1430**

Manganous, ferrous, cobalt, zinc, cadmium and lead acetate were used at concentrations of 2·0, 0·2 and 0·02 millimol. The motility of the spermatozoa was recorded at hourly intervals for 4 hours. Iron and copper were consistently toxic at the highest level; ram spermatozoa were susceptible to copper at all levels. Cobalt and lead depressed the motility of human and rabbit spermatozoa at the highest level only; they were without effect on ram and bull spermatozoa. Zinc was toxic to human spermatozoa, only at the highest, whilst cadmium was toxic at all levels. Cadmium depressed the motility of bull spermatozoa at the highest level. The protective action of sulphydryl reagents was investigated. Cysteine and "British anti-lewisite" were too toxic to be of use with human spermatozoa. Glutathione (0·8 mM) decreased the toxic effects of Cu for ram spermatozoa, and of Cd for human spermatozoa.

W. considers it unnecessary to use distilled water in diluents for semen.—L. Martin.

White, I. G. (1955). **Studies of the spermicidal activity of chelating agents.**—*Aust. J. biol. Sci.* **8,** 387-395. [Author's summary modified.] **1431**

In studies of the action of 0·1 mM chelating agents on the motility of ram, bull, rabbit and human spermatozoa, the following effects were seen: Cupferron (nitroso - phenylhydroxylamine), *o* - phenanthroline, and 1-nitroso-2-naphthol were spermicidal to all 4 species. Sodium diethyldithiocarbamate, ethyl potassium xanthate, 8-hydroxy quinoline, and salicylaldoxime were toxic to bull, rabbit and human spermatozoa. Diphenylthiocarbazone was toxic to rabbit and human spermatozoa; with the latter species phenylthiohydantoic acid and dithio-oxamide were also spermicidal. The action of 0·2 mM metals on the toxicity of chelating agents for bull spermatozoa was investigated and it was found that: The toxicity of sodium diethyldithiocarbamate, 1-nitroso-2-naphthol and *o*-phenanthroline was reduced by cobalt; copper increased the toxicity of 1-nitroso-2-naphthol, cupferron, 8-hydroxyquinoline and ethyl potassium xanthate; cadmium had a similar effect on ethyl potassium xanthate. It is suggested that the spermicidal activity of these chelating compounds may be dependent on combination with trace concentration of copper and other heavy metals, and that the protective action of cobalt may be due to it competing to form a non-toxic compound.

Hancock, J. L. & Shaw, I. G. (1955). **A new difference between live and dead spermatozoa.**—*Nature, Lond.* **176,** 260. **1432**

Dead bull spermatozoa are agglutinated by a certain formaldehyde solution diluent, whereas live ones are not. The effect was checked against nigrosin/eosin staining in 103 ejaculates from 7 bulls.—F. L. M. Dawson.

El-Sheikh, A. S. & Casida, L. E. (1955). **Motility and fertility of spermatozoa as affected by increased ambient temperature.**—*J. Anim. Sci.* **14,** 1146-1150. [Authors' summary modified.] **1433**

Exposing male rabbits to a temp. of 110°F. at a relative humidity of 30 to 40% for one hour did not affect the motility of spermatozoa. Fertility tests were made in 6 different trials, each including semen from one heat-treated rabbit and from one control. The treated rabbits revealed no decrease in percentage of spermatozoa showing forward movement for one month after treatment. The effect of heating on the ratio of fertilized to unfertilized ova was significant with some recovery 21 to 39 days after treatment. It was concluded that increased ambient temp. may affect male fertility without any apparent depression of spermatozoan motility.

Moeller, A. N. & Van Demark, N. L. (1955). ***In vitro* speeds of bovine spermatozoa.**—*Fertil. & Steril.* **6,** 506-512. **1434**

By direct microscopic observation, the authors estimated that the average speed of bovine spermatozoa was 114 μ per sec., with a range of from 10 to 352 μ per sec. There was much variation in the speed in spermatozoa in different ejaculates from the same bull, as well as in ejaculates from different bulls.—R.M.

Campbell, R. C. & Edwards, J. (1955). **The effect on conception rates of semen diluents containing citrate or phosphate buffer, with all combinations of sulphanilamide, streptomycin and penicillin.**—*J. agric. Sci.* **46,** 44-55. [Authors' summary modified.] **1435**

In a 2^4 factorial experiment involving 68,713 first inseminations, semen diluents con-

taining citrate or phosphate buffers and all combinations of sulphanilamide, streptomycin and penicillin, the main results obtained were :— (i) Unsupplemented phosphate buffer gave a conception rate 5·5% above that obtained with unsupplemented citrate buffer (u.c.b.). (ii) Citrate buffer with sulphanilamide, streptomycin and penicillin gave a conception rate 6·8% above that obtained with u.c.b.; (iii) Phosphate buffer with penicillin gave a conception rate 9·3% above that obtained with u.c.b. This effect was not, however, significantly greater than that referred to in (ii). Phosphate buffer depressed conception rate when used with sulphanilamide or streptomycin.

WHITE, I. G. (1955). **The collection of rabbit semen.**—*Aust. J. exp. Biol. med. Sci.* **33,** 367-370. **1436**

An improved artificial vagina, based on that of Macirone & Walton (1938), is described. It incorporates temp. control, and is simple to construct and to use.—L. MARTIN.

AVERILL, R. L. W., ADAMS, C. E. & ROWSON, L. E. A. (1955). **Transfer of mammalian ova between species.**—*Nature, Lond.* **176,** 167-168. **1437**

Eighteen eggs from super-ovulated sheep, after up to 45 min. at room temp., were transferred to the oviducts of 7 doe rabbits previously mated with a vasectomized buck, and after 5 days, 9 eggs were recovered having continued to cleave normally although they had become coated with the mucin layer characteristic of rabbit ova. Two of the 6-day blastocysts were transferred to an appropriate ewe; one of these was recovered, normally developed, at "16 days of pregnancy". The use of rabbits as "incubators" may enable successful long-distance transfer of sheep eggs.—F. L. M. DAWSON.

AUSTIN, C. R. (1955). **Polyspermy after induced hyperthermia in rats.**—*Nature. Lond.* **175,** 1038. **1438**

The author has previously reported an increased incidence of polyspermy in rats when coitus was delayed until after ovulation [see *V.B.* **24,** 3353]. Polyspermy was inhibited by exposing the female to a temp. of 35° to 42°C. for 6 hours after delayed coitus.

—W. R. BETT.

SELLERS, K. C. & LEECH, F. B. (1955). **Survey of losses associated with pregnancy and parturition in Yorkshire sheep.**—*J. agric. Sci.* **46,** 90-96. [Authors' summary modified.] **1439**

Data concerning a random sample of about 4% of the flocks in Yorkshire were collected in the form of answers to a questionnaire: 98% of the farmers in the sample replied. The survey revealed the extent of losses during pregnancy and parturition in 1952–53 and the areas in which they were most severe, and gave some indication of the factors involved.

It also provided statistics concerning feeding and husbandry and the relative importance of different breed types in Yorkshire.

GIBB, J., ASTILL, K. J., MILLER, S. J. & MOULE, G. R. (1955). **Abnormalities of the vaginae of Merino ewes in Queensland.**—*Qd. J. agric. Sci.* **12,** 33-38. [Authors' summary modified.] **1440**

Abnormalities were found in the vagina in 6·5% of 2,903 Merino ewes examined by means of a speculum. In 4 of 6 ewes examined P.M., the mid-third of the vagina was constricted. In the other 2, an obstruction due to fibrous adhesions between the walls of the vagina was found in the region where the hymen should be situated. In a small breeding trial with ewes having abnormalities of the vagina, the percentage of ewes that lambed was lower than in a flock of unaffected ewes.

BU, I. (1955). Undersøkelser vedrørende lokalbehandling av uterus under brunst- og lutealfasen av seksualsyklus. Konsentrasjonen av sulphadimidin i blodserum etter infusjon av stoffet under brunst- og lutealfasen av seksualsyklus hos kviger. **[Studies on local treatment of the uterus in the oestral and luteal phase of the sexual cycle.]**—*Nord. VetMed.* **7,** 917-928. [In Norwegian. English and German summaries.] **1441**

In 3 normal heifers 30 ml. 33⅓% sulphadimidine was administered by intra-uterine infusion at oestrus and 10–13 days after oestrus (corpus luteum present) and the blood level of sulphadimidine measured 8 times in the following 10 hours. The blood level in the luteal phase was consistently higher than during the oestral phase, apparently owing to the greater discharge of the solution from the uterus during the oestral phase. It was concluded that intra-uterine administration of easily absorbable substances in water is more effective during the luteal than the oestral phase.—HUGH BOYD.

KOCH, W. & HEIM, E. (1955). Die uterine Behandlung der Metritis des Rindes mit Oestrogenen. **[Treatment of metritis in the cow by the intra-uterine administration of oestrogens.]**—*Fortpflanzung.* **5,** 29-30. [English summary.] **1442**

In uncontrolled trials, 85 cows with various forms of metritis were treated by intra-uterine injection of oestrogens, together with a bacteriostatic agent in 77 cases. Apparent improvement in fertility was noted and there was no undesirable effect on the ovaries.—HUGH BOYD.

BONGI, A. (1955). L'influenza della gonadotropina follicolinostimolante sulla ovulazione nelle bovine e nelle scrofe. **[Influence of serum gonadotrophin on ovulation in the cow and sow.]**—*Progr. vet., Torino.* **10,** 598, 600 & 602-603. **1443**

It is suggested that, in cases where no obvious cause is apparent, failure of conception may be due to immaturity of the Graafian follicles. Such cases occur more often than has been supposed and respond to gonadotrophin injections. Cows with irregular oestrous cycles or with an absence of oestrus but having immature follicles in the ovaries should be treated with 1,000 I.U. follicle stimulating hormone 4–5 days before oestrus is expected and, if no follicles develop, the treatment should be repeated after 10 days. The same dosage should be used in sows and is a valuable treatment for animals which do not show signs of oestrus after parturition.—J. A. NICHOLSON.

CLARINGBOLD, P. J. (1955). **A study of the joint action of oestrone, oestradiol-3, 17β, and oestriol.**—*Aust. J. biol Sci.* **8,** 396-406. [Author's summary copied *verbatim.*] **1444**

When administered by the intravaginal route oestrone, oestradiol-3, 17β, and oestriol have a mutually antagonistic action on the vaginal response of the ovariectomized mouse. Using the subcutaneous route, these oestrogens are found to have an additive action, behaving simply as dilutions of one active substance.

It is suggested that these results support the view that following systemic administration the natural oestrogens are converted to a common form or mixture in the liver. This common form or mixture elicits responses in the target organs.

The present study confirms the earlier work on the slope and relative position of dose response lines obtained with oestrone, oestradiol-3, 17β, and oestriol using either subcutaneous or intravaginal administration.

CLARINGBOLD, P. J. & BIGGERS, J. D. (1955). **The simultaneous administration of oestrone by the subcutaneous and intravaginal routes.**—*Aust. J. biol. Sci.* **8,** 407-419. [Authors' summary modified.] **1445**

A mathematical model has been developed for the study of the joint action of a substance administered simultaneously by two routes. The model has been used for the study of the joint action of oestrone on the vagina of the ovariectomized mouse when it is injected simultaneously by the intravaginal and subcutaneous routes.

It has been shown that the intravaginal injection of 95–98% of an effective dose together with the subcutaneous injection of the remaining 2–5% results in maximum response.

The significance of these findings to the mode of action of oestrogens is discussed. It is possible that the subcutaneously administered oestrone stimulates blood flow to the vagina facilitating the flow of nutrients to the vaginal epithelium, whilst the intravaginal portion of the dose is primarily concerned with with initiation of the response of the epithelium.

MILLER, W. R. & TURNER, C. W. (1955). **Fecal androgen, a progesterone metabolite in the bovine.**—*Proc. Soc. exp. Biol., N.Y.* **90,** 142-145. **1446**

Progesterone was administered s/c in 1-g. doses daily for 3 days or more to a 6-month-old calf, a yearling heifer, a cow in the 7th month of pregnancy, 3 non-pregnant cows and an 18-month-old bull. A statistically significant increase was observed in the faecal androgen of all the animals except the pregnant cow. It is considered possible that at least part of the faecal androgen normally found in sexually active cattle may be derived from progesterone.—T.E.G.R.

I. ARIAS-STELLA, J. (1955). **Abnormal endometrial changes induced in the rat. The effects of chorionic hormone and estrogen.**—*Arch. Path.* **60,** 49-58. **1447**

II. ARIAS-STELLA, J. (1955). **Endometrial changes in the rat. The effect of estrogen when administered after an interval following castration.**—*Ibid.* 59-62. **1448**

I. Rats treated daily for 21 days with 6 rat units of oestradiol showed a striking cystic tendency of the endometrial glands if dosage

began the day after spaying; this was not apparent in normal animals, nor in those in which dosage was withheld for 4 weeks after surgery. In the latter group, however, it was confirmed that abnormal focal areas of endometrial proliferation developed.

II. For 18–20 days rats received 100 i.u. chorionic gonadotrophin and 35 μg. oestradiol propionate in oil; as compared with controls an abnormal endometrial pattern was produced, proliferative and secretory changes occurring simultaneously. Neither hormone given alone had this effect, nor did it occur in spayed animals treated with both hormones, but a rather similar endometrium is produced by giving 2 mg. progesterone with 52·5 μg. oestradiol to spayed rats. These results are discussed in relation to human pathology. The author considers that luteinizing hormone acts in normal animals by stimulating the ovaries to produce extra progesterone.

—F. L. M. Dawson.

Schoop, G. & Klette, H. (1955). Oestrogene in Futterpflanzen. **[Oestrogen in fodder plants.]** — *Dtsch. tierärztl. Wschr.* **62,** 461-463. **1449**

Fodder plants, both fresh and dried, silage and reinforced feeds were examined for their oestrogen content. This varied considerably, and it was tentatively concluded that the animal body is adjusted to a permanent oestrogen intake from this source, but that above a certain optimum intake disturbances of clinical magnitude may be produced, since the materials with the highest oestrogen content originated from farms which had a high incidence of fertility disorders.

—G. P. Marshall.

Hadlow, W. J., Grimes, E. F. & Jay, G. E., Jr. (1955). **Stilbestrol-contaminated feed and reproductive disturbances in mice.**—*Science.* **122,** 643-644. **1450**

Serious reproductive disturbances, such as scrotal hernia and persistent oestrus, occurred in a breeding colony of white Swiss mice as a result of inadvertent contamination of pelleted feed with diethylstilboestrol during processing in a mill previously used to prepare cattle food containing the drug.

—W. R. Bett.

Carter, M. W., Matrone, G. & Smart, W. W. G., Jr. (1955). **Effect of genistin on reproduction of the mouse.**—*J. Nutr.* **55,** 639-645. **1451**

In each of 12 groups of 9 Swiss albino mice according to weight, 3 mice were fed a control diet, 3 a genistin supplement and 3 a commercial soya bean oil meal supplement. The latter two diets both accelerated vaginal opening; genistin decreased the number of litters born in unit time. Litter size was unaffected, so there was probably no foetal resorption.—F. L. M. Dawson.

Rottensten, K. & Andersen, H. (1955). Foreløbig undersøgelse over sammenhaeng mellem ydelse og frugtbarhed i malkekvaegavlen. **[Relationship between milk yield and fertility in cattle.]**—*Beretn. Forsøgslab. Kbh.* No. 280, pp. 24. **1452**

In some 10,000 lactation periods in 130 herds the percentage pregnant after first insemination decreased with increased production. In 1,781 heifers on progeny testing stations grouped according to yields of butter-fat, the interval between calving and 2nd conception tended to increase with increased yield. Average herd butter-fat yield in 1,005 herds was compared with percentage pregnant after first insemination. Increased yield tended to be associated with a fall in fertility.

—Hugh Boyd.

Hill, H. J. & Gassner, F. X. (1955). **Testicular biopsy in the bull. I. Effect on quality of semen.**—*Fertil. & Steril.* **6,** 215-227. **1453**

Gassner, F. X. & Hill, H. J. (1955) **Testicular biopsy in the bull. II. Effect on morphology of testes.**—*Ibid.* 290-301. **1454**

I. An account of testicular biopsy in 10 bulls aged 2–7 years. Material was obtained by scrotal incision, the skin wound being closed with sutures. A marked decrease in sperm cell count and even complete absence of spermatozoa occurred 2–3 weeks after operation, and this persisted for as long as 4 months before recovery took place. Numerous granular, multinucleated "giant cells" of various sizes were seen in the ejaculates taken after biopsy. The method used had the advantage over puncture methods by obtaining material truly representative of testicular tissue, but its effects were too damaging for it to be used for general sterility examination.

II. Within less than 3 weeks after biopsy extensive coagulation necrosis was evident around the site of biopsy. Recovery from biopsy did not begin until at least 2 months after operation, and it took several months before there was an acceptable degree of improvement in quality of semen.—R.M.

Irikin, V. F. & Starosel'ski, L. S. (1954). **[Experience of eradicating bovine sterility.]**—*Veterinariya, Moscow.* **31,** No. 11, pp. 23-28. [In Russian.] **1455**

The incidence of sterility on several collective farms was reduced by improved hygiene and nutrition, and by the use of a vasectomized bull to detect oestrus in artificially inseminated cows. Details are given of hormone therapy for chronic sterility and iodine therapy for trichomoniasis.

—F. A. Abbey.

Eriksson, K. (1955). **Hereditary aniridia with secondary cataract in horses.**—*Nord. Vet-Med.* **7,** 773-793. [In English. German and Swedish summaries.] **1456**

An account of complete absence of the iris of both eyes in 65 out of 143 Belgian horses bred from a single stallion on the Swedish island of Oland. The condition was inherited as a dominant autosomal gene. Cataract developed in affected foals when they reached the age of about 2 months.—R.M.

MacFarlane, R. G. & Biggs, R. (1955). **The diagnosis and treatment of haemophilia and its related conditions.** — *Memor. med. Res. Coun.* No. 32. pp. 23. London: H.M. Stat. Off. 2s. 6d. **1457**

It is necessary to know the exact cause of haemophilia if treatment is to be rational. In this short memorandum the authors have dealt with clinical and laboratory diagnosis, and treatment. The paper is a model of clarity. The section on lab. diagnosis is comprehensive, despite its brevity.—G. B. S. Heath.

Koch, P., Fischer, H. & Stubbe, A. E. (1955). Die kongenitale cerebellare Ataxie bei Felis domestica als Erbleiden. **[Hereditary congenital cerebellar ataxia in cats.]**—*Berl. Münch. tierärztl. Wschr.* **68,** 246-249. [English summary.] **1458**

Mating of atactic litter-mates did not produce atactic offspring nor was the condition present in kittens from the mating of an atactic male with his normal offspring. Among the progeny produced, however, were kittens with indiscernible cerebral convolutions, underdeveloped cerebellum, absence of vermis, one kidney, one ureter, one ovary and one uterine horn, duplication of the gall bladder, rudimentary kidneys, congenital hydrophthalmus, hermaphroditism and malformation of jaws, tongue and legs. There was also a comparatively high percentage of stillbirths. When the atactic male was mated with a normal, unrelated female, 5 of the 6 resulting kittens had ataxia, but the condition subsided slowly after about 12 weeks of age. The authors concluded that feline ataxia is caused by a dominant pleiotropic factor which, under certain conditions, may become lethal. There may be other factors suppressing its manifestations.—E.G.

Groth, A. H., Jr. & Rosdail, J. R. (1955). **Cystic bile ducts and renal tubules in baby pigs.** — *J. Amer. vet. med. Ass.* **126,** 133-134. **1459**

Multiple cysts were present in the liver and kidneys of 3 piglets which died when 10 days old. The condition was congenital and apparently hereditary.—R.M.

See also abstr. **1092** ((reproductive failure in pigs due to Staph. aureus); **1138** (Pseudomonas infection in bulls); **1156-1166** (brucellosis); **1171** (isolation of L. pomona from aborted bovine foetuses); **1179-1185** (V. fetus infection); **1212-1214** (trichomoniasis); **1249-1250** (ovine virus abortion); **1343** (effect of lucerne in gilts); **1361** (effect of zinc deficiency on males); **1366** (pregnancy disease in ewes); **1398** (ergot and pregnancy); **1419** (secretion in the sheep's oviduct); **1420** (histochemistry of the seminal vesicles in rams).

ZOOTECHNY

D'Emden, P. H. (1955). **Observations on the efficiency of some proprietary sheep branding fluids.**—*Tasm. J. Agric.* **26,** 213-220. **1460**

Various proprietary branding fluids on the market in Australia were tested for their ability to remain legible on different fleece types over a period up to 51 weeks. In addition scouring tests were carried out.

—M. D. Murray.

Daly, R. A. & Carter, H. B. (1955). **The fleece growth of young Lincoln, Corriedale, Polwarth, and fine Merino maiden ewes under housed conditions and unrestricted and progressively restricted feeding on a standard diet.**— *Aust. J. agric. Res.* **6,** 476-513. **1461**

The authors examined the fleece production of young Lincoln, Corriedale, Polwarth and fine Merino ewes under housed conditions of constant, and of variable feed intake. With few exceptions, the values of characters measured formed a graded series from fine Merino through the Polwarth and Corriedale to the Lincoln, either in ascending order (*e.g.* food intake, body wt., fibre size, clean wool, and suint production) or in descending order (*e.g.* total and primary follicle density, and wax output).—P. G. Schinckel.

MORLEY, F. H. W., LOCKART, L. W. & DAVIS, E. C. (1955). **The value of production from a clipped measured area as an index of fleece weight.**—*Aust. J. agric. Res.* **6,** 91-98. [Abst. from authors' summary.] **1462**

The correlation between greasy wool production per unit area, obtained by clipping and measuring an area of about 100 sq. cm. on the midside, and greasy fleece wt. at shearing was about 0·58. Wool production from such an area over periods of $7\frac{1}{2}$ or $3\frac{1}{2}$ months was almost as useful as production for 11 months for predicting greasy fleece wt.

MANN, I. (1955). **Memorandum on the development of animal products in Northern Nigeria.** pp. 89. Nairobi: Government Printer. **1463**

The first half of this memorandum deals with the slaughter facilities obtaining in the main districts visited. The slaughter slab system, which is in general use, is considered highly undesirable from every point of view and recommendations, with plans and specifications are submitted for the construction of slaughter halls, where these are justified by the kill, and for improved slaughter slabs elsewhere. The chilling and transport of meat and the processing of abattoir by-products are discussed and general improvements suggested. Part II is devoted to the hides and skins industry and the importance of the Hides Improvement Service (H.I.S.) is stressed. Recommendations in this section include:—(1) liaison between producer, H.I.S. and exporter; (2) training of all personnel and improvement of research and of production facilities; (3) organization of marketing channels and legislation.—T.E.G.R.

GORDON, W. A. M. & LUKE, D. (1955). **The impact of environment on the health and productivity of pigs.** — *Vet. Rec.* **67,** 996-1006. Discussion: pp. 1006-1011. **1464**

An account of a comparative study of environment in the so-called open type and the sleeper type of house for pigs with reference to general hygiene, health and food conversion rates. The observations were made over a period of years on a large commercial pig farm in Northern Ireland.—T.E.G.R.

ROLLINSON, D. H. L., HARKER, K. W. & TAYLOR, J. I. (1955). **Studies on the habits of Zebu cattle. III. Water consumption of Zebu cattle.**—*J. agric. Sci.* **46,** 123-129. [Author's summary modified.] **1465**

The quantities of water consumed every hour by 10 cattle during 20 periods of 24-hour observations were studied. A large variation in day-to-day consumption was evident, but water was taken on an average during 8 hours of the day with only a small amount during darkness. The mean consumption per animal per 24-hour period was 9·04 kg. (1·9 gal.). The range was 5·1–12·7 kg. (1·1–2·8 gal.). Although the hourly consumption fluctuated, the daily intake did not. A significant negative relationship was found between water consumed and grazing counts, and for one group significant positive correlation was found between water consumption and dry air temp.

TECHNIQUE AND APPARATUS

MARCUS, S. (1955). **Disposable petri-type dish.**—*Science.* **122,** 762-763. **1466**

M. has devised a petri-type dish from paper and plastic. It is reliable for usual bacteriological use and is inexpensive enough to be discarded after it has been used once.

—D. POYNTER.

HECKLY, R. J. (1955). **Rapid and precise measurement of moisture in biological materials.**—*Science.* **122,** 760-761. **1467**

In this method the water is measured manometrically. The sample being tested is never exposed to the atmosphere. Although primarily designed for determining residual moisture in dried biological material, the method is useful for determinations in air, food, pharmaceuticals and a wide variety of industrial products.—D. POYNTER.

NEWLANDS, M. J. & WILD, F. (1955). **Sources of platelet factor for the thromboplastin generation test.**—*Nature, Lond.* **176,** 885-886. **1468**

The authors suggest replacing human brain extract by soya bean phospholipid. Preparation of the material is described. The substitute appears to give satisfactory results.

—G. B. S. HEATH.

EDWARDS, D. A. W., HAMMOND, W. H., HEALY, M. J. R., TANNER, J. M. & WHITEHOUSE, R. H. (1955). **Design and accuracy of calipers for measuring subcutaneous tissue thickness.**—*Brit. J. Nutr.* **9,** 133-143. **1469**

A new pair of calipers has been designed with a constant face area and spring pressure, reading to 0·1 mm. Their accuracy has been satisfactorily tested.—W. S. MARSHALL.

MERKT, H. (1955). Ein neuartiger, fahrbarer Operationstisch für die tierärztliche Praxis. **[Transportable operating table for farm animals.]**—*Dtsch. tierärztl. Wschr.* **62,** 202-208. **1470**

An illustrated account of a folding, two-wheeled operating table designed to be towed by a car. It is especially suitable for cows, pigs and small ruminants.—M.G.G.

See also abstr. **1096** (special syringe for treatment of mastitis); **1146** (typing of S. cholerae-suis); **1151** (typing of S. pullorum); **1212-1213** (diagnosis of trichomoniasis); **1268** (canine hepatitis virus tissue culture); **1321** (culture of Ancylostoma larvae in chick embryos); **1335** (Schultz Dale test); **1476** (book, cell culture); **1480** (phase-contrast haematology).

MISCELLANEOUS

LIENERT, E. & MATHOIS, H. (1955). Versuche zur Hemmung der Bellfreudigkeit von Rüden mittels Östrogene. **[Suppression of barking in male dogs with oestrogens.]** — *Wien. tierärztl. Mschr.* **42,** 100-107. [English, French and Italian summaries.] **1471**

In one of 4 dogs in which synthetic oestrogen was implanted in varying dosage, barking was reduced, but the method was not recommended as undesirable effects were also noted.—HUGH BOYD.

REPORTS

AUSTRALIA. (1954). **Sixth annual report of the Commonwealth Scientific and Industrial Research Organization for the year ending 30th June 1954.** pp. 179. Canberra: A. J. Arthur, Govt. Printing Office. 10s. 6d. **1472**

Sheep vaccinated against CASEOUS LYMPHADENITIS challenged by i/d injection yielded inconclusive results owing to loss of virulence. Results from field trials did not support previous indications that either vaccination or the use of a "clean" rested pasture for newly-shorn sheep had been useful in control.

The incidence of SHEATH ROT in wethers was reduced by transferring them from a pasture dominated by subterranean clover-rye grass to one dominated by capeweed *(Cryptostemma calendulaceum)* or to a diet of oat chaff. When they were returned to the clover-rye grass pasture the lesions reappeared. Lesions disappeared from wethers transferred to green oats, but reappeared after further grazing. The urine from sheep grazing capeweed was more alkaline than that of sheep grazing the clover-rye grass pasture.

Useful resistance to BRUCELLOSIS continued into the fifth year after calfhood vaccination with Strain 19 and there appeared to be no advantage from re-vaccination three years after calfhood vaccination. FOOT ROT of sheep: tests showed that 10% chloramphenicol in methylated spirits or propylene glycol was highly effective. Further work on BOVINE CONTAGIOUS PLEURO-PNEUMONIA confirmed that attempts to vaccinate very young calves are likely to lead to painful joint infection and valvular lesions in the heart. A tonsillar infection was recorded in the dam of one of the vaccinated calves. The cow gave a positive c.f. test, and at P.M. examination only the tonsillar lesions were found. This suggests that tonsillar infection may be a cause of no-lesion c.f. reactions, or of transient reactions which have been seen in an epidemic.

Damalinia ovis oviposits in response to temperature. Oviposition occurred between 36° and 39°C. *Linognathus ovillus* prefers the face region of the sheep but spreads back over the ventral aspect of the neck. Complete control was achieved with benzene hexachloride. Studies on BLOWFLY STRIKE were concerned chiefly with protection by spraying and "jetting". The latter was the more effective. As an anti-adult insecticide D.D.T. (1%) proved more lasting than benzene hexachloride (B.H.C.), dieldrin or aldrin (0·25%). At 0·25% B.H.C. gave protection against adult flies for 5 weeks. Dieldrin, aldrin and malathion were much less effective. Against larvae, dieldrin and aldrin were superior to the other insecticides and provided protection up to 23 weeks. "Jetting" the heads of rams with 1% dieldrin gave complete protection for at least 11 weeks. Dieldrin, aldrin and B.H.C. were all effective for treating strikes and prevented re-strike for 13 weeks. Two sheep had no ill effects after s/c injections of 100 mg./kg. body wt. of aldrin in peanut oil and their blood after treatment was not toxic for maggots. Studies on *Boophilus microplus* included trials with insecticides and some basic work on penetration of D.D.T. and B.H.C. into ticks. No differences were found in penetration of B.H.C. between resistant and susceptible strains. Chemical breakdown of gamma-B.H.C. occurs in dipping vats and estimations

made by dehydrohalogenation analysis may be misleading. Formulation of D.D.T. and B.H.C. (as "lindane") with a chlorinated polyphenol did not give longer persistence of the insecticides on the hair. Malathion in field trials gave variable results. Dieldrin and aldrin showed great promise. Aldrin, dieldrin and lindane, in peanut oil, were injected s/c into cattle at 25 mg./kg. body wt. There were no toxic effects and the younger stages of the ticks were destroyed. Female ticks do not engorge until fertilized, but retain the ability to engorge for some time. Progeny of ticks falling in late winter and early spring tend to hatch simultaneously, producing the "spring rise" infestation. Dipping in early spring enabled a reduction in the number of dippings during summer. The tick population must not be reduced too drastically, otherwise young cattle may not receive their "immunizing" dose of piroplasms. In hot, dry regions rotational grazing with a spell of 3 summer months enabled a considerable reduction in dipping. Toxins were isolated from eggs of *B. microplus*.

Copper pentachlorphenate in field trials was a promising molluscicide against *Simlimnaea subaquatalis*, the only intermediate host of *Fasciola hepatica* in Australia. Studies on the particle size and anthelmintic efficiency of phenothiazine indicated that it gave satisfactory results against *Haemonchus contortus*, *Oesophagostomum columbianum* and *Trichostrongylus* spp. provided 90% of particles were less than 30 μ in diam. Phenothiazine appeared to be less effective against *Ostertagia* spp. than against *T. colubriformis*. Monthly drenching with phenothiazine in a flock with very light worm burdens reduced wt. gains slightly and aggravated photosensitization of the ears. In worm-free lambs in pens phenothiazine reduced the appetite for a few days. Tests with phenothiazine derivatives against *Syphacia obvelata* in mice showed that 1 - methoxyphenothiazine, 3 - ethoxyphenothiazine and 4, 4-dichlorodiphenylamine were effective, but that 3-phenylphenothiazine, 3-iodophenothiazine, N - benzoylphenothiazine, and 2, 4-dinitrodiphenylamine had only very slight effects. 1, 8 - Dihydroxyanthraquinone was very effective. Removal of *Trichostrongylus* spp. by anthelmintics did not prevent young sheep resisting challenge infestation. Sheep resistant to *T. colubriformis* were resistant to *T. vitrinus* but not to *T. axei*. Sheep resistant *T. axei* were usually susceptible to *T. colubriformis*. The antibody response to *T. axei* was similar to that with *T. colubriformis*. Intake of larvae of *H. contortus*, *T. axei* and *Ostertagia* spp. appears to produce "self-cure" of infestation with the adults. In sheep grazing oats there was a close relationship between the elimination of *Oes. columbianum* and *Trichuris ovis* and the pH of the faeces, most worms being passed when pH had fallen to less than 6·5. *T. axei* larvae invaded all parts of the mucosa in the abomasum but especially the outer edges of the spiral folds whilst *H. contortus* larvae were most numerous in the mid region. In histological studies on the mucosa of the abomasum the "Schollenleukozyten" or globule leucocyte was not found in worm-free sheep, but appeared in the abomasum or intestine of sheep which had been infested for at least 5 weeks. Lambs on irrigated pastures gained less wt., produced less wool/head and harboured heavier worm burdens than similar sheep on natural, non-irrigated pastures on the same field station. In Western Australia heavy autumn rains resulted in heavy worm burdens. A group of sheep drenched 4 times in the year with phenothiazine yielded 1·4 lb. more wool than controls. In another trial, although there was little difference in wool production, the controls showed a 70% incidence of "break" in the wool fibres. The infective larvae of *H. contortus* and *Oes. columbianum* developed in large numbers only when the faecal pellets were continuously moist, and this was governed by rainfall, evaporation, and density of pasture. When calves are first exposed to *H. contortus* (now *H. placei*) the worm population increases rapidly or gradually to a max. usually of short duration and generally followed by an abrupt decrease to low levels. Under certain conditions the infestations persist and outbreaks occur. Trials are in progress to determine whether outbreaks result from very large doses of larvae or are due to malnutrition, or both. In experimental infestations in worm-free calves the worms do not appear to persist for more than a few weeks. "Self-cure" has been observed. When calves develop resistance a challenge dose of larvae may persist but fail to develop. Larvae in the fourth stage have been found in the abomasum as long as 56 days after administration. Antibody responses were generally absent. Observations on worm egg counts did not suggest that a correction factor for the consistency of faeces was of value. Investigations have begun to differentiate the microfilariae of *Onchocerca gibsoni*,

O. gutturosa and *O. fasciata* in cattle as a preliminary to life-history studies. In cattle phenothiazine at 0·2 g./lb. body wt. proved very effective against *H. contortus* and *Oesophagostomum (Bosicola) radiatum* but had little effect on *Bunostomum* and *Cooperia*. Tetrachlorethylene at 10 ml./80 lb. body wt. in equal parts of liquid paraffin immediately preceded by 60 ml. 10% sodium bicarbonate soln. to stimulate closure of the oesophageal groove was effective against *H. contortus* but not against *Bunostomum* and only partially so against *Cooperia*. Effective stimulation of the oesophageal reflex by sodium bicarbonate was achieved in 80% of calves. Blood analyses of two calves carrying heavy nematode infestations revealed severe anaemia and very low values for calcium and copper.

In cases of Pregnancy Toxaemia in ewes the only consistent biochemical finding was a much higher level of acetic acid in the blood than in fasted pregnant ewes which did not develop the disease. In Wheat Engorgement in sheep atony of the rumen occurs a few hours after eating the wheat; this may be due in part of the low pH. When 10 g./kg. body wt. of wheat or more was consumed by susceptible horses, lactic acid fermentation developed throughout the bowel, as in sheep. It was accompanied by mild acidosis and severe haemoconcentration, but only slight lactacidaemia. The systemic disturbances were not necessarily accompanied by laminitis. Marked laminitis developed in horses which consumed only 7 to 9 g./kg. body wt., but no evidence of predominantly lactic acid fermentation was found P.M. 2 or 3 days later. The histology of laminitis is being studied. Studies on Copper Deficiency in sheep were directed chiefly towards the complex relationships between molybdenum, sulphate and Cu. Intake of 100 mg. Mo/day increased the rate of depletion of Cu from the liver during the seasons when the pastures contained insufficient Cu to make good that lost in the normal course of metabolism, and decreased materially the rate of storage during the periods when the Cu in the pastures was relatively high; but in no circumstances, either in the field or in pens, did Mo reduce the Cu stores of sheep receiving 8 to 10 mg. Cu/day below the critical level at which signs of Cu deficiency appear. Ingestion of 100 mg. Mo/day by ewes during pregnancy did not adversely affect storage of Cu in the foetus. Sulphate influences the rate of elimination of Mo, but only in very special circumstances that of Cu. Sheep confined to cobalt-deficient rations do not always become anaemic; many die from inanition, due to lack of vitamin B_{12}, before they develop any blood dyscrasia. The metabolic defect which interferes with haemopoiesis is subsidiary to the defect which underlies the failure of appetite. Studies on "Toxaemic Jaundice" of sheep continued. Susceptibility to the haemolytic crisis of chronic Cu poisoning may result from ingestion of plants other than *Heliotropium europaeum*. When sheep grazed pastures top-dressed with superphosphate containing Mo (8 oz./acre) the amount of Cu stored in the liver was reduced. Laboratory studies showed that the smaller the amount of Mo in the diet the greater the amount of sulphate required to prevent Cu accumulation, and *vice versa*. In crossbred (British breed × Merino) sheep, provided the diet contains a certain minimum amount of inorganic sulphate, excessive intake of Mo (about 100 mg. daily) may result in fleece lesions, including loss of pigment in black wooled sheep, similar to those seen in Cu deficiency. Blood Cu increased when the intake of both Mo and sulphate, but not of either alone, was high. An abnormally low vitamin A status, with night-blindness, appears in young sheep confined to vitamin A-deficient diets for about 8 months. After a further 4 months food consumption declines, weight is lost and muscular incoordination appears. Older sheep with larger stores of vitamin A withstand the first effects for at least 16 months but subsequently decline rapidly. An intake of 25 to 30 μg. carotene/kg. body wt./day is barely sufficient to prevent symptoms but double this intake fulfils requirements and permits some storage.

A new endemic area for Bovine Chronic Haematuria differs geologically from other affected areas in Australia, but resembles areas in Germany and Transylvania. Survey by scintillograph did not reveal abnormal levels of γ-radiation. An outbreak of an acute and readily transmissible Vaginitis was investigated. It was not transmitted by filtrates, and none of the bacteria isolated reproduced the disease.

Investigations on Chronic Fluorosis in sheep are almost complete. Water containing fluorides in concentrations equiv. to 10 p.p.m. fluorine is harmful to grazing stock. The ill effects on the health and productivity of sheep appear to be due to tooth lesions, and direct toxic effects are not likely to arise in the field where sheep are confined to artesian bore

water. As fluorides do not pass through the placenta or into the milk in sufficient quantities to cause ill effects on the lamb, mature ewes may be lambed while drinking fluoride-bearing water provided the flock is removed before the lambs begin to drink water. Dental lesions develop only when the teeth are being formed and therefore sheep whose permanent teeth have erupted may be watered safely on artesian waters containing at least twice the quantity of fluoride which would cause damage in young sheep. PHALARIS STAGGERS in sheep may be prevented by oral administration of cobalt (1 mg. Co/day) weekly. Parenteral introduction of relatively massive doses of either Co or vitamin B_{12} affords no protection. Attempts to isolate the neurotoxic principle have been unsuccessful.

Other investigations include effects of high temperature on pregnancy in Merino ewes, breeding season of Merino ewes in relation to light environment, environmental control of coat changes in cattle, genetic studies on inheritance of resistance to MYXOMATOSIS, nutritional studies on carotene and vitamin A and vitamin B_{12} in sheep, ruminant digestion, drought feeding, INFERTILITY and physiology of reproduction, breeding and genetical studies with sheep and cattle, biochemical studies of skin and wool growth, parasite physiology and toxicology (including studies on biological activity of complex ions), neo-natal mortality of lambs, and feeding of cattle.—H. MCL. GORDON.

SOUTHERN RHODESIA. (1954). **Report of the Director of Veterinary Services for the year ending 30th September, 1953.** [ADAMSON, J. S.] pp. 29. Salisbury: Govt. Printer. **1473**

The cattle population was 3,057,372 consisting of European and indigenous stock in the proportion 2 : 3.

An outbreak of ANTHRAX at Salisbury caused 56 deaths among cattle and six Africans contracted the disease through eating meat from infected carcasses. 7,220 cattle were vaccinated and a consignment of infected hides from Northern Rhodesia was destroyed. 10,250 cattle at Fort Victoria were also inoculated.

Cattle testing was carried out under the Voluntary Scheme for the eradication of TUBERCULOSIS and the reactor incidence was 2·3% as compared with 4·48% for the previous year. Only in one herd was the incidence high (45%). On a ranch in Matabeleland holding 29,442 head, positive reactors amounted to 20·5%. The test applied was the Single Comparative Test. At meat inspection the disease was detected in 2,666 cattle and 40 pigs.

TRYPANOSOMIASIS was widespread, calling for high precedence in detection, treatment and control. Smear surveys were carried out and control measures included the careful use of trypanocides, cattle clearance and, where possible, the destruction of infected stock. TICK-BORNE DISEASES showed an increase in incidence and mortality. Tick-control by short-interval dipping and hand dressing with the newer insecticides was adopted and, where circumstances permitted, destruction, rather than treatment, of the affected animals was advocated.

FOOT AND MOUTH DISEASE was prevalent. All three South African Types of virus (S.A.T. I, II, and III.) were identified. The infected areas were cordoned off and inoculation with the appropriate field virus was carried out. Mortality was high owing to the virulence of S.A.T. I and II and to the extremely cold weather in June and July. 121 cases of RABIES were confirmed and avianized vaccine was used on 37,336 dogs. Breakdown of immunity was reported in 60 cases and may have been due to a variety of factors acting singly or in combination. On the whole the vaccine stood the test well. Much work was done on CONTAGIOUS EPIDIDYMITIS AND VAGINITIS and steady improvement in the situation was reported. Artificial insemination played an important part in its prevention. Heavy mortality from AFRICAN HORSESICKNESS occurred among inoculated and uninoculated horses. A severe form of THREE-DAY SICKNESS swept through Matabeleland causing heavy mortality. HEARTWATER accounted for 48 deaths and sporadic cases were also reported in Fort Victoria. There was no evidence of NEWCASTLE DISEASE during the year and all restrictions were, therefore, lifted. PSITTACOSIS was confirmed in a flock of racing pigeons at Salisbury; all the birds were destroyed.

Good progress was reported in connexion with artificial insemination.—T.E.G.R.

BOOK REVIEWS

AINSWORTH, G. C. [Department of Botany. University College of the South West of England, Exeter, Devon.] & BISBY, G. R. [Commonwealth Mycological Institute, Kew, Surrey.] (1954). **A dictionary of the fungi.** pp. viii+475. Kew, Surrey: The Commonwealth Mycological Institute. 4th Edit. 20s. **1474**

Few reference works in mycological literature can have run to four editions in so short a time as the DICTIONARY OF THE FUNGI and this must stand as a testimony of its usefulness. Although it essentially covers the whole field of mycology there is sufficient information on fungi of veterinary and medical importance to be of great value to those concerned with animal diseases.

As well as providing an index to the genera, brief but useful references are given under each pathogen and disease and longer entries are found antibiotic substances, mycological methods, nomenclature, serology, medical mycology, ergot and poisonous fungi. Mycological terms are fully explained and many illustrated, whilst a revised key to the families by Professor G. W. Martin is given at the end of the book. Numerous new entries are included in this edition.

—P. K. C. AUSTWICK.

HORSFALL, W. R. [Associate Professor of Entomology, University of Illinois.] (1955). **Mosquitoes: their bionomics and relation to disease.** pp. viii+723. London: Constable & Co. Ltd. (New York: The Ronald Press Co.) 105s. **1475**

This book is a summary of the literature on the bionomics and relation to disease of the Culicinae. Over 12,000 references were scanned; about 4,000 of the more important ones comprise the bibliography.

It is designed as a reference book. The contents are arranged according to genus and species, and the information is presented systematically in each chapter. There appear altogether about 1,800 binomial and 300 trinomial designations in 29 genera.

There are no illustrations, but the extensive use of tables has enabled the author to compress information in a clear and orderly fashion.—M.G.G.

WHITE, P. R. [Research Associate, Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine]. (1954). **The cultivation of animal and plant cells.** pp. xi+239. New York: The Ronald Press Co. $6.00. **1476**

This book is intended as an introduction for those entering the field of cell culture. The author's purpose is three-fold—(1) To present all the major techniques of cell culture, (2) to present a few simple techniques for the beginner, and (3) to emphasize the essential importance of the cell itself.

There are chapters on the history of cell culture, materials suitable for cell culture, the equipment required, nutrients, the types of culture, the setting up of cultures, measuring the growth of cultures and the applications of cell culture. There is a useful bibliography of 16 pages. The text is accompanied by photographs and diagrams.—M.G.G.

—. (1955). **Some physiological aspects and consequences of parasitism.** [Edited by: COLE, W. H.] pp. xi+90. New Brunswick, N. J.: Rutgers University Press. $2.00. **1477**

This work consists of a series of six papers dealing with different aspects of the physiology of parasitism. Each reviews the current work on its subject and gives the results of the writer's experiments. The papers include studies on the cultivation of malaria parasites; the protein metabolism of intracellular parasites; glycolytic enzymes of *Schistosoma mansoni*, and leishmaniasis in the hamster.

In the paper 'Intestinal physiology and the host-parasite relationship', applying and extending the results of older work to the study of the excystation of the cysticercoids of *Hymenolepis diminuta* and *Oochoristica symmetrica*, it was stated that there were five different factors affecting the process in the former tapeworm. The pepsin and acid preparation in the stomach 'sensitized' the cysticercoids to the action of the bile and trypsin in the small intestine. Further investigation showed that temperature and duration of exposure to the enzymes were critical factors. None of these results were based on *in vitro* studies, and give but a one-sided picture in terms of the host. With our present knowledge and techniques it should be possible to verify these results *in vivo*.

W. H. Taliaferro in the paper entitled 'Studies in antibody formation' described his experiments on the investigation of the for-

mation of anti-sheep hemolysins in the rabbit, the rise and fall of antibody titre following intravenous injection of antigen, and the initial formation of antibody by the spleen which is later continued at a lower level by non-splenic sources. He discusses the possible mechanisms influencing such antibody formation and decay, and with reference to his experiments on the X-ray inhibition of antibody formation, postulates that there may be a brief period early in immunization that is radio-sensitive and which determines the result of the antigenic stimulus.

This book is designed to correlate the material of some of the physiological problems of parasitism in order to incite interest in a subject that is still in its infancy.

—W. E. Parish.

Osol, A. [Professor of Chemistry and Director of the Department and School of Chemistry, Philadelphia College of Pharmacy and Science] & Farrar, G. E., Jr. [Medical Director, Wyeth Laboratories, Inc.] (1955). **The dispensatory of the United States of America.** pp. xvii + 2139. Philadelphia & Montreal: J. B. Lippincott Co.; (London: Pitman Medical Publishing Co.) 25th Edit. 200s. **1478**

This mammoth work aims at providing practical and up-to-date information about drugs used in human and veterinary therapeutics—an aim which is amply fulfilled. Of its three parts the first describes drugs recognized by the United States, British and International Pharmacopoeias and the National Formulary: it is thus international in outlook. The second part deals with drugs not recognized by official sources, and the third part is devoted to veterinary uses and doses of drugs. This veterinary section occupies 122 of the 2,139 pages and, like the rest of the book, it is remarkable for wealth of detail. It incorporates information provided by the British Veterinary Codex (1953) and by recent literature, to which references are quoted in full. The index to the book lists synonyms of drugs, often giving French, German and Spanish names, and gives proprietary names. It is a unique work for reference purposes, combining in one volume information which would otherwise be scattered in a dozen different sources. The result is a book four and a half inches thick, which has the disadvantage of being unwieldy: its division into three separate volumes corresponding to each of the three parts would overcome this problem without reducing the book's usefulness.—R.M.

Bessis, M. (1954). Traité de cytologie sanguine. **[Treatise on cytology of blood cells.]** pp. 588. Paris: Masson et Cie. Fr. 6000 & 6800. **1479**

This is a comprehensive and richly-illustrated text on haematology. It is divided into three parts:— techniques; general physiology and pathology of blood cells; and the detailed study of each type of blood cell. The technical part deals with vital staining, cytochemical methods, electron microscopy and experimental cytology in addition to the classical methods for the examination of blood and bone marrow. References are numerous and are given at the end of each chapter. There is a combined index of authors cited and subjects. The 22 coloured plates and the numerous photomicrographs are excellent.

—R.M.

Franke, H. [Apl. Professor an der Freien Universität Berlin]. (1954). Phasenkontrast-Hämatologie. **[Phase-contrast haematology.]** pp. 75. Stuttgart: Georg Thieme. D.M. 9.60. **1480**

An account of a technique of preparing blood for phase-contrast microscopy, with 89 photographs depicting normal and abnormal human blood pictures.—R.M.

With, T. K. [Specialist of Internal Medicine and Clinical Chemistry, Rigshospitalet, Copenhagen, Denmark]. (1954). **Biology of bile pigments. Including a review of their chemistry and a discussion of analytical methods.** pp. xiii + 523. Copenhagen: Arne Frost-Hansen, Publishers. [In English.] **1481**

Dr. With has written a comprehensive treatise on the bile pigments for which all interested in the subject will be grateful whether their discipline be biochemistry, pathology or physiology. The veterinarian will be gratified to find that Dr. With has not confined himself to man but has approached his subject, as far as possible, from a comparative point of view; indeed his last chapter is entitled 'Comparative biology and biological significance of bile pigments. Bile pigments in lower animals and plants'. In every section reference is made, wherever possible, to work on animals in addition to that on human material.

The author is a well-known investigator in the field of bile pigment metabolism and it is clear that he writes from experience and with authority. After a chapter on the chemistry of the bile pigments, their derivatives and the reactions by which they are recognized, he proceeds to a consideration of the formation and fate of bile pigments in the body from the qualitative and quantitative points of view.

There follows a long section on jaundice and bile pigments in blood and urine. Bile pigments in the bile itself and in the faeces are next considered, bile pigments in tissue fluids, secretions and organs and ultimately the value of bile pigment analyses. There are seven Addenda in which reference is made to work appearing after the respective chapters were compiled. Particularly valuable is the bibliography of over 2,000 references quoted in full, which surveys the world's literature on this subject from before 1800 to the present day. Good subject and author indexes complete the arrangement.

Dr. With says in his preface that the writing of this monograph has occupied some eight years; he has put all biologists into his debt by this labour. The English is good but it is a pity his publishers have not served him better. The monograph consists of some 500 mimeographed pages (one side only) which are generally well reproduced but much more tiring to read than a printed page. This format also results in an unwieldy volume, $11\frac{1}{2}'' \times 8'' \times 2\frac{1}{2}''$, weighing over 6 lb. The peculiar scarcity of tables also makes for heavy reading. Dr. With has, however, enhanced his text by the judicious use of underlining and—a very valuable feature—has provided a short summary at the end of every important section which will greatly help those using the monograph as a work of reference.

The chemistry and physiology of bile pigment metabolism is complex and whilst this is essentially a book for the specialist there is no doubt that readers whose work is of a more general character, whether physicians, veterinarians or pathologists, but to whom a knowledge of modern ideas concerning bile pigments and their formation is important, would do well to study it. Dr. With has put forward a number of new ideas and has suggested changes in the presently accepted classification of types of jaundice.—C. RIMINGTON.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

—. (1955). **Advances in veterinary science.** Vol. II. pp. xii+449. New York: Academic Press, Inc.; (London: Academic Books, Ltd.) [Edited by BRANDLY, C. A. & JUNGHERR, E. L. $10.00.

—. (1955). **Cybernetics. Circular causal and feedback mechanisms in biological and social systems. Transactions of the Tenth Conference, April 22, 23, and 24, 1953, Princeton, N.J.** [Sponsored by the Josiah Macy, Jr. Foundation.] [Edited by: VON FOERSTER, H., MEAD, M. & TEUBER, H. L.] pp. 100. New York: Josiah Macy, Jr. Foundation. $2.75.

—. (1955). **Studies on fertility. Including papers read at the Conference of the Society for the Study of Fertility, Birmingham, 1955. Being volume VII of the Proceedings of the Society.** [Edited by: HARRISON, R. G.] pp. ix+156. Oxford: Blackwell Scientific Publications, Ltd. 28s.

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   L. K. Whitten, *Wallaceville Animal Research Station, New Zealand.*

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   C. A. Hoare, *Wellcome Laboratories of Tropical Medicine, London.*

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   K. L. Blaxter & Rosemary F. McGill, *Hannah Dairy Research Institute, Scotland.*

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